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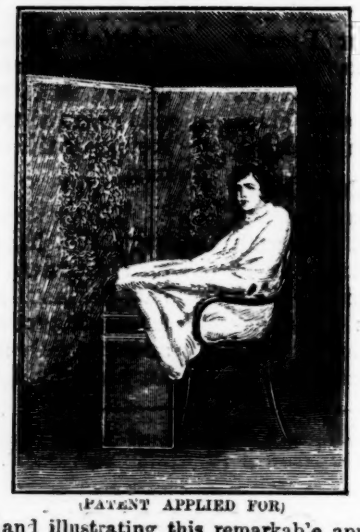

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An Address
ON
THE IMPORTANCE OF EXPLORATORY INCISION IN CANCER OF THE BREAST.*

BY
DUNCAN C. L. FITZWILLIAMS, C.M.G., M.D., CH.M., F.R.C.S.,
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LECTURES given to students and addresses given to practitioners are two different things; one dogmatizes in the former, and the student, having no experience, has perforce to take what is offered him. The practitioner, however, is a person who has experience, who has formed his own opinion. We all have our own ideas—some may be right and some may be wrong; but in any case we have formed them slowly and we shall only change them slowly. At the same time, it is difficult to gauge how much of our original teaching tinges our views, biases our minds, and governs our judgement. At first it must do so very largely, as time goes on to a less and less extent; to a less and less extent, too, as we keep ourselves abreast of the times and hear new views. It is with this object in view, doubtless, that you ask men from the teaching schools to address you.

In this sense I come to lay before you my views on what I believe our procedure should be in connexion with the early diagnosis of cancer of the breast. These views represent the present trend of thought, or the direction in which I hope we are travelling; they are by no means final, and will probably be changed in the next generation, but you will find that they resemble in no way the teaching of twenty years ago. These views may seem extreme to some because they are new, and all new views seem at first extreme; but they will presently be accepted by all, taught in our medical schools to the younger generation, and pass in time into the limbo of what is old-fashioned.

In the first place, it will be as well to define what is here meant by "early carcinoma of the breast." To me it is an indefinite something or an undefined thickening—we are not quite sure; it is difficult to make out; at all events, there is not a single sign of malignancy, and nothing even to bring malignancy to mind. That, I consider, is possibly early cancer of the breast. Anything which has any characteristic of malignancy I no longer regard as early; it is sufficiently well established to give rise to signs and symptoms. This early stage is the time at which cancer of the breast can be diagnosed if we will do it, and that is the time, and the only time, that we can almost guarantee a cure to our patients.

The breast is the one place where cancer is seen early; it is the one place in which a radical operation can be performed—that is to say, it is the one place in which the growth, the glands, and the whole lymph field is removed in one. Compare it with carcinoma of the abdominal viscera: in the abdomen we cannot even begin to suspect cancer until symptoms develop; ulceration occurs and blood is passed, diarrhœa is constant or obstruction threatens; but even then we may not be able to locate it, above all we can do nothing approaching a radical operation. Compare it with a superficial growth like epithelioma of the lip; we remove the growth and also the glands of the neck; we do not remove the lymphatics by which spread has taken place, neither can we remove all the glands of the neck, but we rest content with what we do; luckily, epithelioma is not nearly as malignant as cancer of the breast, and therefore our results escape criticism. In cancer of the tongue, to take another example, we remove the growth and we remove as many glands as we can; many glands are, however, left behind, and the lymph field is untouched; our results are what we should expect in such cases.

All know the signs and symptoms of cancer of the breast, so I need not waste time upon them except to draw attention to the fact that they are all due to one thing—namely, extension of the growth. The growth must extend for these symptoms to be suspected, to appear, and to develop. We need, therefore, only assign their appropriate value to each of them in their order of importance.

Fixity of the skin is the earliest sign of malignancy it is possible for us to have, and is the most suspicious and significant. But the time at which it develops is not constant. Gross saw it develop in about two months, but states that it is usually about fourteen months before it is developed. Fourteen months is a long time to wait in order to get the first sign of malignancy. If the onset of the cancer is in the superficial parts of the gland, then the skin is attacked earlier than if it starts in the deeper portions. It is seen better and earlier in a thin person than in one in whom there is a thick layer of adipose tissue. A cancer may therefore become well established before even puckering, wrinkling, and anchoring of the skin develops at all. There are other conditions, too, in which it is found: old fibro-adenomata, chronic abscess, tuberculous masses, and occasionally in chronic mastitis.

Retraction of the nipple is the next sign of importance, and this, again, is quite inconstant. It is present early in cancer which starts near the nipple, and is absent till quite late, and may never develop, if the cancer starts at the periphery of the gland. Another important fact is that in the rapidly growing carcinomata the opposite may occur, and the breast become prominent and the nipple protrude, while it is well seen in the less malignant and more atrophic forms. It is also present in any chronic condition in which fibrous tissue forms, so that it is met with in chronic abscess and chronic tubercle.

Enlargement of glands in the axilla is a sign to which some attach great importance, but personally I think it one of small significance. Cancer can hardly grow without being accompanied by chronic mastitis, and chronic mastitis nearly always causes enlargement of the axillary glands. In addition every form of inflammatory change will cause enlargement of the glands in the axilla, and therefore very little reliance should be placed upon this sign. Far more important really is the feel of those glands; small but very hard glands are far more significant than large ones.

Often enlarged glands can be felt in connexion with cancer of the breast, and yet when examined after the operation nothing malignant is found in them. On the other hand, during the operation small glands are sometimes found right up at the apex of the axilla, in the triangle between the first rib, the clavicle, and the coracoid process, which cannot be felt, are not enlarged, but yet are infected. Stiles pointed this out long ago and drew attention to the fact that it was impossible to feel them. They become infected as a rule through the lymphatics which run upwards between the pectoral muscles and which pierce the costo-coracoid membrane; sometimes there are infected glands lying on the costo-coracoid membrane.

Age is, I think, a great factor in diagnosis; sometimes, however, it is misleading. The commonest age at which carcinoma of the breast occurs is between 45 and 55; all agree upon this. All agree too that after this age carcinoma is very frequent, and I think in the minds of all of us there is the impression that the older a person is the more likely is any given lump to be a carcinoma, and this is true because the inflammatory conditions in the breast are less likely to occur in a withered and functionless organ. There is the general impression too that carcinoma hardly ever occurs in people under 35; nothing, however, could be more misleading. I know of several cases which occurred in the teens. Thompson and Battle and Mayberry reported cases at 11 years old, one of which was a squamous-celled carcinoma; Commichael one at 12 years; Home one at 15, which was bilateral; and Brewer one at 16.

* Delivered to the Nottingham Medico-Chirurgical Society, January 28th, 1925.

If we go to the male sex, Blodgett noted carcinoma in a boy of 12 and Bryan in one of 14. A little while ago Professor Pannett took the second breast from a woman aged 34 in St. Mary's Hospital, having removed her other breast nearly eight years previously. Rodman in a collection of 5,000 cases found that 9 per cent. were in people between the ages of 20 and 30. All through the public records you would be surprised at the number of cases recorded, not on account of the age, but for some other reason, in which the age was under 30. So that you cannot exclude carcinoma merely on account of youth, and we must correct the very strong and almost irresistible tendency we all have to do so. We all, in spite of ourselves, tend to acquit a tumour of the breast of being malignant merely because it occurs in a young person, a thing we are in no way justified in doing.

These are the signs upon which we rely for suspicion of cancer. There are others, such as discharge from the nipple, which is very rare; it is present in only about 3 per cent. of the cases. Fixity to the muscle or chest wall, the condition of "pig-skin," ulceration of the skin, enlargement of the supraclavicular glands, are all very late symptoms, and need not be considered. When they are present the question of diagnosis no longer troubles us; we then only have to decide if an operation can still do any good.

Diagnosis.

There are three different classes of cases clearly distinguished in my own mind into which the patients may be divided.

In the first category there is the patient who obviously has cancer; the first glance at her breast tells us so. Here all the signs and symptoms which characterize malignancy are fully developed. The nipple is displaced, the veins are enlarged, the skin bound down and may be ulcerated with a fungating and discharging sore, pig-skin appearance widely developed over a large area, and small nodes and nodules visible in the skin round about; large masses are visible in the axilla and above the clavicle. The patient is thin, emaciated, and anxious-looking. She excuses herself for not seeking advice sooner, giving every excuse except the real one—that she was afraid. She regards us anxiously, guiltily, and beseechingly, hoping against hope for a comforting and favourable verdict; but in her own mind she has made the diagnosis, and she has made it correctly without any medical training. What more does the picture need? Fortunately these cases are rarely seen, though probably every practitioner has come across one or more such patients who have hidden their condition till the last moment. Here, then, the problem solves itself.

The next category is where there is a definite mass in the breast, the nature of which is doubtful. Here the question of diagnosis is one of the most important which can be put to the medical man—so much depends upon it. The greatest skill, care, and trouble should be taken to arrive at a correct diagnosis. There is no infallible guide: skill, experience, common sense, and that curious faculty we call intuition, all come to our aid in a way it is impossible to explain.

In the case with which we are dealing the signs are not sufficiently developed for us to differentiate clearly, and the question arises, Are we dealing with a malignant or innocent tumour? An innocent tumour is here taken to include all inflammatory conditions as well as innocent. To take first the probabilities. It is estimated from large numbers of collected figures from various sources that 80 per cent. of all tumours of the breast are malignant and 20 per cent. innocent. That is a proportion of 4 to 1 in favour of malignancy. These figures, to my mind, are not quite accurate; they are derived very largely from hospital records, but records are only kept of those cases which are of sufficient importance to gain admission to the institution, and many small innocent cysts, tumours, and miscellaneous inflammatory masses, of which no records are kept, are dealt with in out-patient departments. We shall therefore possibly be more accurate if we say that 70 per cent. are malignant and only 30 per cent. innocent. I am putting it as fairly as I can. This, in sporting terms, is nearly 2½ chances to 1 that the condition is malignant—a figure which at once must forcibly attract our attention. With these odds in mind, it is only right, it is only safe, to regard all tumours as malignant until we have proved them innocent. This is the only way in which we can do justice to our patient. We have unfortunately a natural tendency which is almost irresistible to do the exact opposite, and to regard all tumours as innocent till malignant symptoms develop.

The things which guide us to a correct diagnosis are all small in themselves, and we can take them in order.

The presence of pain in a small growth is very much against the mass being cancer; similarly, but to a less extent, is the presence of pain on handling the mass. Inflammatory masses are often more or less painful or tender; cancer is a painless malady till the later stages. Pain is associated with cancer in the minds of the laity simply because the later stages of the disease are familiar to them through their looking after or visiting relations and friends in the last stages of the disease.

Cancer in the later stages, as we all know, is a very painful and distressing disease, wearying, even repellent, and fear-inspiring to those who nurse the patients, but in the early stages it is insidious, quiet, and painless. The fact that cancer is painless till its later stages should be broadcasted widely among the laity, as many do not seek advice for tumours because, as they are painless, no alarm is caused.

The presence of masses in both breasts is against cancer and in favour of interstitial mastitis; cancer very seldom starts in both breasts at once. It is said that if at this stage a tumour can be felt with the fingers, but is impalpable to the flat of the hand, this is against its being cancer; but it is a sign that I am rather chary of mentioning, as great stress is often laid upon it as a way of telling whether cancer or chronic mastitis is present, though as a sign to tell this it is quite useless and, as we now regard matters, mischievous and misleading; a small cancerous mass is quite as impalpable to the flat hand as is chronic mastitis. Moreover, chronic mastitis may be present in which cancer is starting, but has as yet none of the characteristics of cancer.

The margins of the tumour should be carefully considered, for the margins of a scirrhus are usually much better defined than those of an inflammatory mass. This, however, does not hold good if the scirrhus is rapidly extending, while sometimes the edges of a chronic abscess are remarkably well defined.

Dimpling or the slightest adhesion of the skin, as already stated, is very much in favour of malignancy, but is not pathognomonic. The hardness of a scirrhus is rarely attained by any other tumour, but sometimes the mass is too deeply situated for this to be made out, and hardness can easily be simulated by a tense cyst. Enlarged veins seen coursing over the tumour are in favour of malignancy.

Lastly, there is the important fact that cancer rarely takes origin at the time of lactation; it does so sometimes, we all know, but it is rare, while this is the favourite time for inflammatory conditions to start.

These, then, are the various points which guide us in difficult cases. Sometimes, of course, they are insufficient to guide us correctly, and therefore an exploratory incision should be made before performing the radical operation, or else with the best intention in the world serious mistakes will be made. Now this is the ordinary case which presents itself to us in the usual course of events, and it is the one which some are still inclined to call "early cases" just because malignancy is not written across the chest by the display of every malignant characteristic.

The third category is the one to which our attention is especially directed. Here there is only an indefinite lump. We may suppose it is deep seated in a voluminous breast so that nothing definite can be made out. Examination prompts us to say that there seems to be a vague thickening in the breast that should not be there, but beyond this there is nothing whatever to be felt. There is not even the certainty that there is anything, beyond perhaps some-

thing that feels like a slight mastitis; signs and symptoms of malignancy do not arise. This is the problem which I am going to ask you to regard as the problem of the early case. The patient is 50 years of age; what advice is to be given to her? Yours is the responsibility.

Well, there is the ordinary thing which is so easy to do, which is a ready way out of the difficulty, and which will be pleasing and acceptable to the patient; that is to say to her, "Yes, perhaps I can feel a little thickening in your breast, but that is not surprising at your time of life; in fact, it is almost normal; do not take any notice of it. Come and see me in a month's time." A month passes and there is no perceptible change. Another month, and yet a third pass, and perhaps the mass is a little larger; it is deep seated; it is very difficult to say definitely; you reassure her, and perhaps you do not see her for two or more months; you have said, "There is nothing to be alarmed at," and she is not nervous about it. In any case you say to yourself, "There certainly is no sign of malignancy—no harm can come from waiting." Six or eight months pass, and now there is a mass for sure; perhaps the skin does not slide over it quite so freely, but if the mass is deep seated and the person is fat the skin may be quite free, so that even yet there is no sign of malignancy. Perhaps the practitioner suggests a consultation, not as necessary really, as you have already committed yourself by saying the condition is nothing, but merely advisable; the patient demurs—she feels so much better, the liniment is doing her good, she is sure the lump is smaller; and in this way ten to twelve months may have passed before a consultation is arranged and an operation suggested.

An operation is performed and cancer is found. We still regard the condition as early, but if it is early now, what was it twelve months ago? I do not think that I have drawn the picture inappropriately or exaggerated it; we have lost a year. We have acquitted the lump of being cancer merely because it was small, had not spread and infiltrated the tissues sufficiently to enable us to say that it was malignant. We have been oblivious to the obvious fact that cancer must begin in a microscopic area and has at first no sign of malignancy, and we have forgotten the 2½ chances to 1 that it was malignant to start with; we have failed to treat the condition as malignant until it was proved innocent. Many writers have endeavoured to calculate the average time the mass has been suspected before it comes to the surgeon, and different observers have varied from a year to thirty months as the time lost.

This method of procedure does not seem to be unusual; we were brought up "to watch such cases carefully." It is what we are used to, and it does not seem strange—in fact, you say it is the obvious, the ordinary, and the best thing to do. But it means, in blunt English, that we are going to do nothing *except waste time*. Curiously enough, we do not realize this. But let me put it to you, Is there any other condition in which the chances are 2½ to 1 in favour of malignancy in which you would knowingly waste a year in order to be certain? If there is, then I do not know it. Let us reduce the matter to absurdity: Why have you waited? You will say, In order to be certain. But you were not certain when you operated—why not wait another six months till all the symptoms of malignancy gradually blossom forth? You then really will be certain. You say, That would not be fair. My reply is that it is as fair to wait now as it was to wait then, with the chances always 2½ to 1 against the patient. You waited at the only time when operation held anything approaching a certainty of cure. You should have held the mass to be malignant until it was proved innocent. What right had you to say to the patient, "It is nothing," simply because you did not know?

The Johns Hopkins School teaches—and I believe it is right—that the development of any malignant sign whatever diminishes the patient's chance of cure by 25 per cent. Moreover, what has been done while we have waited? Ointments and liniments have been energetically applied to the breast, which has been well massaged. And when we consider that the spread of the cancer is by the cells passing along the lymphatics, is not massage of this sort the very last treatment we should care to apply? Yet I can assure you it is ordinary treatment, and the only form of treatment if anything is done at all.

Having waited, then, till some symptoms of malignancy have developed, the patient is operated upon. The best results we have of operations at the present day are—39 per cent. living and well at the end of five years, 61 per cent. dead or dying. This analysis is from America; no other analysis gives such favourable figures. There is a very marked difference in the results we get from private cases and those we get from hospital cases; the former are much better than the latter, the difference being due to the fact that we see private cases usually at a much earlier date. I should be surprised if 20 per cent. of the hospital cases were alive and well at the end of five years. Surely this is a poor result for surgery. No wonder every form of treatment has its loud-throated advocates, and every form of treatment can always produce its cancer cures, from violet leaves through the range of pastes up to the more orthodox procedures such as injections of selenium, lead, and gold, right up to the palliative treatment supplied by *x* rays and radium. If these are the results of surgery, surely every one of these methods is justified. The only thing that the surgeon can boast is that, bad as his results are, they are infinitely better than those of any other form of treatment.

Such, then, is the result of adopting the plan I have indicated. Is there no better plan? I think there is, and one I would earnestly ask you to try.

The woman is 50 years old, with this indefinite thickening and no more, and we are to advise her to the best of our ability. By no possible means of examination can we make a diagnosis by the ordinary methods, therefore we must adopt new ones. The answer to our doubt can be given to us without delay, and without dubiety, if we will remove the suspected mass and have it examined under the microscope by an expert. If it proves to be simple, we then can say to the patient, "It is nothing—you can now set your mind at rest," and we have now good authority for saying so which we never had before. If it proves to be malignant it can be removed at a time when she has the greatest possible chance of cure.

We need not go into the technique of the procedure, beyond saying that a circumferential incision can be made in the sulcus between the breast and the chest wall, the breast turned upwards, and the mass removed from the back of the breast. Radiating incisions are made outwards from the nipple, and a piecrust-shaped piece removed. The edges are seared with a cautery to prevent the escape of cancer cells in the event of its proving to be a carcinoma; the raw surfaces are sewn up and the breast replaced. The nipple is not interfered with, and there is no visible scar left. If preferred the pathologist can be present, and by means of a freezing microtome examine the mass then and there, and if necessary the complete operation can then be proceeded with in the event of the mass proving to be cancer. I prefer, however, the more methodical examination in the laboratory, where it can be conducted without haste, as I think a truer estimation can then be formed. Sir Lenthal Cheatle shows how difficult it is to decide, even by the microscope, as to whether the mass is really early cancer or not by the examination of only one or two sections. In these early cases the whole mass must be carefully *searched* and any suspicious piece cut separately. The search must be carried out by a skilled person; it cannot be done by the laboratory boy.

By this means we can avoid the delay which accompanies the other and the commoner method of arriving at a diagnosis, and we place our patient in a far happier position with regard to the result.

I have drawn attention to the best statistics we have of the results of operation, and they are poor enough, and I have also conscientiously gone through all the cases of breast carcinoma of St. Mary's Hospital since 1900, and have written to a great many of the people operated upon in recent years. I cannot give the exact figures as I have

not made them out, but our hospital results are not anywhere near as good as the figures of private cases. I tell all my breast cases to come and see me after the operation, and I try to keep an eye upon them every so many months. I do not believe 20 per cent. of them are alive and well after five years. Surgeons will give many instances of people alive and well after the five years mentioned, but I believe the bulk of these are private patients; I myself have them up to seventeen years. But in private, whatever the delay may be, we see them, as a rule, far earlier than we see the hospital cases.

For my own part I freely admit that in the best cases I have the operation on the breast in the first place was not done with any idea of cancer, but always for chronic mastitis, and the cancer found later and the whole breast removed. That is the secret of the best of my cases, and that is how the importance of avoiding delay became impressed upon me. I believe that if operations for cancer of the breast could be carried out at this time there is no reason why we should not have 75 per cent. alive and well at the end of five years.

In the last twenty years the operation on the breast has quadrupled its gravity, but I do not think it has as much as doubled its benefit to the patient, and much even of that benefit is due to earlier operation, for the dread of operations is less now than it was. The extent of the operation has reached its limit, and if our results are to improve, as I am confident they can, then it must be by earlier diagnosis; and earlier diagnosis along the lines I have just indicated is bound to come.

I know the objection that will be raised is that many early cases would be operated upon in which no malignancy was found, and therefore the operation need not have been performed and is therefore unjustifiable. But the preliminary operation is a comparatively slight one; it leaves no visible scar, and if nothing serious is found the patient's mind can be set at rest; she is rid of the mass, and she is all the better for being rid of it. Does not getting rid of the mass and the giving of a definite diagnosis compensate and justify the proceeding? Think, too, what we gain every time we do find a cancer. How many cases of obscure abdominal disease undergo an exploratory operation and nothing is found? but the operation is not held to be unjustified. How many cases of obscure abdominal trouble are operated upon, and an apparently normal appendix removed? But it is not therefore said that the operation was unwarranted. How many times are gall stones diagnosed and at the operation no gall stones are found? We all know these cases, but we do not say that we have done more than take proper precautions.

Those who were at hospital twenty-five or more years ago can recall how few were the operations for gall stones or for appendicitis then seen. We were only beginning to operate upon these cases, and now they are more than common. Before that time exploratory operations upon the abdomen were unheard of; now they are a matter of common practice, and are carried out on quite slight grounds—the suspicion of gall stones or appendicitis, enteroptosis, chronic constipation, slight obstructive pains the cause of which is obscure; they are exploratory and diagnostic, and therefore considered necessary for diagnosis. The likelihood of cancer is certainly present, but it is not the formidable bugbear it is when we are dealing with the breast. Nothing is thought of exploratory abdominal operations, but the same people will often object to having an exploratory operation performed on the breast, though no one could compare the severity and seriousness of the two operations.

Believe me, the same change which has come in your lifetime in the case of appendicitis and gall stones is going to come in the case of the breast, and exploratory operations will in time be common, and greatly to the benefit of the patient. It may be a new doctrine now, but in a few years it will be the ordinary teaching of all medical schools, and the "wait and see" policy will be a thing of the past; it will be that policy which will be called unjustifiable, and the more we think of it the more unjustifiable it is from every point of view.

THE CAUSATION AND PREVENTION OF RICKETS.*

BY

A. WEBSTER AND LEONARD HILL.

(From the National Institute for Medical Research.)

RICKETS is a disease of civilization, and is so frequently found in the large cities of America and Europe that it is doubtful whether the children of the poorer classes ever wholly escape it. Good evidence of a seasonal variation in the incidence of rickets has been shown by many observers—Schmorl, Hansemann, and others. It reaches its height in the winter and declines in the summer. Palm was the first to correlate this seasonal variation with the incidence of sunlight, and thus to anticipate by many years wider discoveries.

CAUSATION.

Many theories have been advanced to explain the cause of rickets: overfeeding, starvation, intestinal intoxication, defective hygiene, disorders of the ductless glands, and acidosis. The first great impetus to the modern intensive study of rickets was given by the work of Mellanby in this country in 1918. He varied the diets of young growing puppies until he found diets that would invariably produce rickets. To these diets he added various substances, and noted if any effect was produced in the process of calcification. He experimented on a large number of puppies and brought out many interesting facts. His most important conclusion was that rickets was really a deficiency disease—that is, it was caused by the absence from the food of a vitamin, and that the particular vitamin concerned was vitamin A or something closely associated with it. He found generally that fats richest in vitamin A were the most potent in preventing rickets, cod-liver oil being by far the best.

Soon after the publication of Mellanby's work the American investigators, McCollum, Simmonds, Shipley, and Park, and Sherman and Pappenheimer, showed almost simultaneously and independently that rickets could be produced in the rat by diets that were abnormal in their inorganic constituents. Their investigation showed that apart from any vitamin deficiency the essential thing in the production of rickets was to impoverish the diet in the raw materials of the skeleton—that is, in calcium and phosphorus. They found that rickets could be produced by diets poor in phosphorus or in calcium, or by diets that contained these elements in unbalanced amounts. More especially was it shown that a diet with a minimum amount of phosphorus could be made a rickets-producing one by the addition of excess of calcium. Although bone owes its rigid structure to its calcium phosphate content, most previous workers on the subject had, curiously enough, confined their attention to the part played by calcium in bone formation only. It is obvious that calcium without sufficient phosphorus to combine with it is useless to the organism for bone formation, and the work of the American investigators gave this point due consideration. Sherman and Pappenheimer more particularly proved that the form in which the phosphorus was given—that is, as a simple inorganic phosphate or as an organic phosphate in various types of combination—was important. They showed generally that soluble inorganic phosphates were more efficient in preventing rickets.

This work on rats paved the way for extensive work on the part played by deficiency substances in the etiology of rickets. Cod-liver oil was introduced as a specific for rickets by the Frenchman Bretonneau. Trousseau and other physicians had convinced themselves of its effectiveness by clinical observation. By means of a histological test—the so-called lime test—McCollum, Simmonds, Shipley, and Park showed that cod-liver oil caused a remarkable deposition of lime salts in the cartilage of the rachitic rat close to its junction with the metaphysis. Howland and Park demonstrated also, by means of the x rays, the

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deposition of lime salts in the bones of rachitic children following administration of cod-liver oil. The specific action of cod-liver oil in curing and preventing human rickets has been established by many observers, more particularly by Chick and her collaborators in an extensive investigation in Vienna.

Although Mellanby was inclined to believe that the anti-rachitic principle of cod-liver oil was fat-soluble A, other observers began to doubt it. Findlay, using butter-fat, claimed that though it was rich in vitamin A yet it was poor as an antirachitic agent. Sherman and Pappenheimer first showed clearly that a diet deficient in vitamin A only would not produce rickets. This was confirmed by other investigators.

McCollum, Shipley, Simmonds, and Park compared the action of butter-fat and cod-liver oil, and came to the conclusion that the latter contained in abundance a substance that was antirachitic but which had no specific action on growth or the prevention of keratomalacia. McCollum, Simmonds, Becker, and Shipley proved that the antirachitic substance was distinct from fat-soluble A vitamin. Hopkins has shown that fat-soluble A vitamin is destroyed by combined heat and oxidation. McCollum and his co-workers treated cod-liver oil in this way until, as shown by tests on animals, it had lost its power to promote growth; this oil was found, nevertheless, to be potent as an antirachitic agent. This conclusive experiment settled once and for all the non-identity of vitamin A and the unknown antirachitic agent.

Radiant Energy.

In 1919 the German physician Huldschinsky reported that he had cured cases of rickets in children by radiating them with the light from a quartz mercury vapour lamp. The action was not local, radiation of one limb healing the rickets of both limbs. This important observation was confirmed by many workers.

The quartz mercury vapour lamp emits rays rich in the ultra-violet region, and it was proved that the active rays were these short invisible ones. Window glass cuts off these rays, and Huldschinsky found that he could not cure rickets if the light of his mercury vapour lamp was filtered through glass. The active rays were the ultra-violet ones. Hess and his co-workers extended these observations and showed that ultra-violet light would cure and prevent rickets in rats. They also proved that other sources of ultra light—the carbon arc and cadmium spark—were active against rickets. By means of selective filters they were able to cut off different portions of the spectrum, and arrived at the conclusion that the active rays were those having a wave-length of 300 $\mu\mu$ or shorter.

Hess and his co-workers and McCollum and his also showed that the rays of the sun would prevent rickets in rats. The sun's rays, it may be mentioned, extend down to about 290 $\mu\mu$ in the ultra-violet region. If the sunlight is filtered through glass then it does not protect against rickets. Miss Chick and her co-workers proved the protective power of sunlight on a large number of children in Vienna fed on rachitic diet. The experiments we describe confirm and amplify the fact that ultra-violet light is specific in protecting against experimental rickets in rats.

Radiant energy, it must be concluded, is as important a factor in the cure and prevention of rickets as the unknown substance present in cod-liver oil and other oils. The children in city tenements in Britain are made rickety by a diet insufficent in antirachitic substances and by over-clothing and confinement indoors. Exposure of children more or less nude to sunshine or arc lamps would be of great benefit.

Iversen and Lenstrup and Howland and Kramer showed independently that the blood in cases of rickets is low in inorganic phosphorus. The inorganic phosphorus of normal children is about 5 mg. per cent.; in cases of rickets it may fall as low as 1 mg. per cent. In rickets complicated by tetany the calcium in the blood is below normal. These chemical changes in the blood are well established by a large number of investigators, and it can now be asserted that rickets is always associated with a diminished content of calcium or inorganic phosphate or both in the blood. In rachitic children it is usually the inorganic phosphorus that is low.

Hess, examining the blood of children in New York, claims to have shown that there is a seasonal variation of inorganic blood phosphate; it falls during the winter, reaching its minimum in March, and rises again in the spring and summer till it is at its maximum in the late summer. This observation confirms in a striking way the opinion of Palm, expressed, as has already been mentioned, so many years ago, that rickets is due to insufficient sunlight.

If a cardinal symptom of rickets is a blood low in calcium or inorganic phosphorus, then cod-liver oil or ultra-violet light, if they are specific antirachitic agents, might raise the concentration of these substances in the blood when administered to cases of rickets. That this is so has been shown by many investigators. Hess was the first to demonstrate a rise in inorganic blood phosphate in the blood of rachitic children following ultra-violet light treatment.

Iversen and Lenstrup and Howland and Kramer have shown that cod-liver oil has the same effect. McCollum and co-workers produced rickets in rats by giving diets (1) poor in phosphorus, and (2) poor in calcium. Other rats on the same diets had cod-liver oil in addition. Howland and Kramer examined the blood of these rats, and showed that (1) were low in inorganic phosphorus, and that (2) were low in calcium. Those rats having cod-liver oil had the normal calcium and inorganic phosphate blood contents. The histological structure of the bones follows in a quite remarkable way the concentration of calcium and inorganic phosphorus of the blood.

It is well established, then, that rickets is a metabolic disease characterized by bones deficient in calcium phosphate, and accompanied by a diminished content in the blood calcium and of inorganic phosphate; that it can be cured both clinically and in experimental animals with certainty by administering cod-liver oil, and that the curative action is not due to vitamin A. It can also be cured with certainty by the action of ultra-violet light.

In what way do these two dissimilar agencies act? A consideration of the calcium and phosphorus metabolism may throw some light on this problem. The experiments of one of us (A. W.) described in this paper show that experimental rickets is accompanied by defective absorption of calcium and phosphorus from the intestinal tract and a very low uptake of these elements from the food supplied. Other observers, notably Paton, Sharpe, and Findlay, and Telfer have found that this is also the case with rachitic infants. Telfer has proved that the administration of extra calcium decreases the absorption of phosphorus, as shown by the urinary output; ingestion of fat also lowers the absorption of calcium, which is excreted in the faeces as calcium soaps. It is often urged against metabolism experiments that they are of too short duration and consequently are liable to gross errors. This cannot be said of the experiments described in this paper, in which the calcium and phosphorus metabolism was recorded throughout the experimental period of one month. In the rachitic rats A. W. did not get a negative calcium or phosphorus balance, and it is obvious that rickets is possible without the actual loss of calcium or phosphorus from the organism. Telfer finds that this is the case with rachitic infants. A. W.'s experiments show conclusively that both ultra-violet light and cod-liver oil greatly increase the absorption of calcium and phosphorus from the intestinal tract, and that this is followed by an increased retention in the skeletal structures as shown by bone analysis.

These results suggest very strongly that the primary seat of rickets is the gastro-intestinal tract—a view that is by no means new. In this connexion the experiments of Zucker, Johnson, and Barnett are of interest; when they made their rickets-producing diet acid it no longer produced rickets. They also examined the faeces of rachitic and non-rachitic rats, and found that the *p*H of the faeces of the non-rachitic rats was lower—that is, more acid—than those of rachitic rats on the same diet. If the intestinal contents are made acid it will prevent the formation of

insoluble calcium compounds, more especially the basic calcium phosphate, and so facilitate absorption of calcium and phosphorus in the blood stream. It has been suggested that the bacterial flora of the intestine may have some influence on absorption, and the experiments of Hill, Eidinow, and Colebrook, who have shown that radiation with ultra-violet light increases the haemobacterial power of both man and experimental animals, are of interest in this connexion. On the other hand, Korenchevsky was unable to produce rickets experimentally by bacteriological means. Findlay, who in a recent review of this subject is inclined to look with favour on the gastro-intestinal tract as the primary seat of rickets, was also unable to produce rickets by infecting the intestinal canal. He suggests that the digestive processes are impaired in rickets, and quotes some experiments that support this view.

The beneficial effects of exercise and a healthy open-air life are in great part due to a raised rate of metabolism, which must be followed by increased absorption from the intestinal canal, but, as shown later, rickets can be prevented in rats by ultra-violet radiation when these animals are kept in stagnant moist warm air. Mere increase of metabolism by exposure to cool open air does not suffice to prevent rickets on a deficient diet. A border-line diet, however, may well be made sufficient by increase of metabolism through exercise and open-air life.

It may be argued that the inability of the rachitic animal to maintain normal levels of calcium and phosphorus in its blood is not due to defective absorption but to other causes; these substances may be absorbed and excreted at a lower level owing to the animal's inability to make use of them—this inability to build up bone from supplies of material present being the root cause of rickets. The present state of knowledge does not permit us definitely to refute this view, but there is quite good evidence against it. The diets used for the experimental production of rickets do so by virtue of their deficiency either in quantity or in balance of calcium and phosphorus, and if this is rectified, then the animals do not develop rickets even if they are deprived of vitamins and radiant energy. Take, again, the experiments of McCollum and his co-workers on the effect of starvation in rickets; they took rats, which they rendered rachitic, and starved them for a few days and then killed them. Histological examination showed that the period of starvation was followed by a marked deposition of lime salts. The breakdown of the starving animal's tissues liberated phosphorus and calcium, which were promptly used to build up bone. This tends to show that it is not the rachitic animal's power of forming bone which is at fault, but lack of the raw materials—that is, calcium and phosphorus.

A consideration of the evidence given in this paper strongly suggests, then, that the primary cause of rickets is a low calcium and inorganic phosphate level in the circulating blood, and that this is due to defective absorption from the intestinal canal; and we favour this view.

Given the presence of adequate amounts of calcium and phosphorus in the blood, how does the animal convert this into bone? Until quite recently knowledge of this process was very meagre; recent work of Robison and his co-workers throws new light on it. They have shown that growing bones contain an enzyme capable of splitting hexose phosphates into inorganic phosphate. If strips of fresh young bone are placed in a solution of a calcium hexose phosphate insoluble calcium phosphate is deposited in the bone. Robison has further shown that a hexose phosphate is a normal constituent of blood, and that it occurs chiefly in the red blood corpuscle. This work is of great interest, but not yet advanced enough to consider specifically from the standpoint of the etiology of rickets. Both normal and rachitic bone contains the enzyme.

EXPERIMENTAL METHODS.

Our experiments were all carried out on rats. Except in a few early experiments when we used the diet described by McCollum, we used exclusively the diet 84 of Sherman and Pappenheimer. This has the following composition:

Patent flour	95 grams
Calcium lactate	2.9 „
Ferric citrate	2.0 „
Sodium chloride	0.1 „

It is a very deficient dieet, poor in protein, practically free from vitamins, poor in phosphorus, and rich in calcium in relation to the phosphorus content. The ratio of calcium to phosphorus is about 4 : 1. It is the low phosphorus content together with the relatively large amount of calcium that gives this diet its rickets-producing character. The content of phosphorus, while being of itself ample, is not absorbed, and is mostly excreted in the faeces in combination with calcium. This diet produces, in fact, phosphorus starvation, and with the stock of rats we used it never failed to produce rickets.

The rats used were the ordinary white albino or black and white rats bred in the Institute. The stock rats were fed on oats principally, with occasional scraps from the canteen and a little greenstuff. The young rats were known to have a minimal quantity of vitamin A stored.

No attempt was made to select particular litters; the rats were taken at random from the Institute stock, animals weighing 40 grams, or as near as possible to this figure, being chosen. Each experimental group consisted of four animals; unless otherwise stated, they were kept in wooden boxes 14 by 9 by 7 inches, with perforated zinc lids; sawdust was used as bedding. The boxes were kept in a poorly lit room, what little sunlight there was having to come through plate-glass windows. The diet was mixed in the form of a stiff paste with distilled water and fed to the animals daily. Distilled water for drinking was supplied *ad lib.* Each rat was weighed at the commencement of an experiment and then weekly. The experimental period was twenty-eight days. At the end of this time they were killed and samples of blood taken for analysis; the bones were either examined histologically or they were *x*-rayed. In most cases the diagnosis was made from an examination of the *x*-ray photographs; although we used histological methods in some of the early experiments we found the *x*-ray method more useful. There is no doubt of the correctness of the diagnosis by this method, the difference between radiographs of rachitic and non-rachitic animals being most striking. Generally the inorganic phosphorus in the blood of the rats was determined at the end of each experiment, as was also the calcium and phosphorus of the bones. Young rats of about 40 grams weight put on the Sherman-Pappenheimer diet increase a little in weight and then decline, their appetite fails, and if left longer than twenty-eight days they usually die. If killed at the end of twenty-eight days gross rachitic changes are obvious and unmistakable. Typical experiments will be described here with the experimental results obtained.

We first tried the effect of exercise, or rather lack of confinement. One group of rats was kept in our standard size box, while another group was kept in a much larger box having four and a half times the floor and nine times the capacity of the small box. Rickets developed in all the rats in each box, so that confinement *per se* was not responsible for the development of the rickets.

Similar experiments were tried in which one group of animals were kept in the large box as before; but the box was kept out of doors for two hours daily, freely exposed to any winds and to a north sky in March, but shaded from direct sun. Rickets again developed. We are forced to the conclusion that exercise and open air but absence of direct sunlight have no specific antirachitic effect on young rats. It is possible that exposure to cold was disadvantageous. The influence of direct sunlight was next investigated. The rats were kept in the standard box, but at 12 noon each day they were transferred to an open-mesh wire cage and exposed on a high balcony facing south for two hours each day to whatever sun was available. The experiments were done in the spring and summer, but in this country the daily amount of sunlight is very variable. Our results varied, but we came to the conclusion that a minimum exposure of two hours to bright sun- or sky-shine five days a week was necessary to protect rats from rickets under the severe experimental conditions we have adopted in this research.

The rays emitted from two different known sources of ultra-violet light—the quartz mercury vapour and the open carbon arc—were next investigated. The rats were kept in their usual standard boxes; when it was necessary to expose them they were transferred to a small large-mesh wire cage and exposed for varying times to either the carbon arc or the mercury vapour lamp. The exposure varied from two hours daily to five minutes daily, and the distance from the lamps two to three feet. The quartz mercury lamp was a vacuum lamp taking 3.5 ampères at 200 volts. The carbon arc was a hand-fed lamp taking 5 ampères. The results are very striking provided the exposure is sufficient and not through glass, which filters out the active ultra-violet rays; radiations from this lamp will always prevent rickets from developing in rats on the standard diet we have used. The minimum exposure that will prevent rickets we found to be five minutes daily two feet from the mercury vapour lamp, and about thirty minutes

for the carbon arc at the same distance. We came to the conclusion that ultra-violet light is specific in its antirachitic effect. This will be emphasized in the experiments we are now going to describe.

This specific action of ultra-violet light seemed to us to conflict with the evidence of the incidence of rickets in tropical climates. Rickets is by no means unknown in the tropics, although it has been shown by chemical tests that the tropical sun is rich in ultra-violet rays. It is well known that the average mean temperature in the tropics is very high, and there is often present also a high degree of humidity. It seemed possible to us that this might influence in an adverse way the specific antirachitic effect of ultra-violet light, so we proceeded to investigate the question.

We first tried the effect of dry heat on young rats fed on a normal diet. A group of young rats was kept in standard boxes, the food consisting of the Institute stock diet—that is, whole cereals with a little greenstuff daily when available. From 5 p.m. to 9 a.m. the rats in their boxes were kept on the floor of the hot room, where the mean temperature was about 33° C. They spent the rest of the time in the outer hot room, where the mean temperature was about 23° C. This was continued for a period of twenty-eight days, when the rats were killed and examined for signs of rickets. No evidence of rickets was seen in any of the rats. Rickets, then, is not produced in rats fed on a normal diet and subjected to a high temperature for twenty-eight days. Another group of rats was fed on the same normal diet and kept in wire cages. These cages were suspended in large tanks with hot water just below but not touching the bottom of the cages. The water was regulated with a thermostat to keep a temperature of about 37° C. The rats thus lived in a very hot humid atmosphere. We found it very difficult to keep rats under these conditions, several dying of acute congestion of the lungs. A couple of rats lived under these conditions for forty days, and when killed they showed no signs of rickets. We came to the conclusion that, providing the diet is adequate, conditions simulating the tropics at their worst, but without any ultra-violet light, will not give rise to rickets in young rats.

We then subjected rats fed on our rickets-producing diet to conditions of dry heat described above, giving half of them thirty minutes' exposure to the carbon arc daily while the other half acted as controls. All the controls developed rickets, while none of the rats that had the light treatment showed any signs of rickets. Even under these adverse environmental conditions ultra-violet light prevents the development of rickets.

Other experiments have been carried out rather different from those described above, but with the same object in view. The usual groups of experimental and control rats were kept in standard boxes on the standard rachitic diet, but the actual light treatment was given under adverse conditions. The light from the carbon arc was by means of an aluminium reflector so focused on the rats as to expose them to tropical heat; other rats were chilled by keeping them for thirty minutes in the cold room and radiating them with the mercury vapour lamp actually in the cold room; yet others were radiated in the hot room with the mercury vapour lamp; further groups were radiated while they were kept cool by a powerful air blast or oppressed by moist heat. The results were always the same: the radiated rats, however adverse the conditions of radiation, were all free from rickets.

We consider these results in general highly significant, and feel justified in making the broad generalization that, provided an animal is supplied with food just sufficient to maintain life and a little growth and a bare minimum of the bone-forming elements calcium and phosphorus, then if ultra-violet light be supplied in adequate amount rickets will not develop however unfavourable the animal's environment be.

We carried out some other experiments on rather different lines.

A favourite remedy with animal dealers and keepers is flowers of sulphur; they say that it tones up animals out of condition and generally helps to keep their coats glossy. Its use combined with treacle as a spring tonic for children is traditional. We therefore tried this as an antirachitic substance. The usual group of four rats were given the standard rachitic diet to which was added 25 per cent. of flowers of sulphur (arsenic-free); at the end of twenty-eight days the rats were killed and examined—they showed no signs of rickets. This suggested an important addition to our scanty list of antirachitic agents, so the experiment was repeated. In the second experiment the result was negative; all the rats developed rickets. We have tried sulphur many times, but conclude that it fails to prevent rickets as often as it succeeds. We are convinced, then, that it can in about half the animals prevent rickets, but its action is uncertain.

In view of the partly favourable action of sulphur we thought it of interest to see if a purgative or an intestinal antiseptic had any antirachitic effects. We used magnesium sulphate as being a typical neutral purge, and thymol as a typical intestinal antiseptic. We also tried arsenic, this substance being a well known tonic and mentioned also in the literature as being beneficial in cases of rickets in children. Magnesium sulphate and thymol proved to be useless as antirachitic agents, all the experimental rats showing severe rickets. The arsenic group of rats all showed rickets, but it seemed to be of a much milder type than that in the controls.

In view of statements made by others we thought it advisable to try the effect of the gases given off by the carbon arc and also of air that had been acted on by the mercury vapour lamp. There was, we found, no protection from rickets, even when the rats breathed the fumes of the irradiated air for a couple of hours a day.

It was suggested to us that the skin was a depot of antirachitic substance, and that ultra-violet light acted on the skin and stimulated it to pour this into the circulation. We therefore tried feeding animals on the antirachitic diet with portions of skin from freshly killed normal rats. The normal rats were killed and then skinned, as much hair as possible was removed, and weighed portions of the skin were administered daily to the experimental rats. The rats consumed the skin avidly. We gave amounts varying from 0.5 to 2 grams of fresh moist skin daily per rat. The results were negative; in fact, the rats that had the 2-gram ration of skin had grosser rickets than the controls.

We carried out an experiment with results that now seem highly significant in view of recent work. A group of rats were taken, and instead of radiating them daily they were given one hour's exposure to the mercury vapour lamp weekly, four exposures being given in all. This sufficed to protect them completely from rickets, and it seemed to us at the time that the light had actually synthesized something in the rat's organism which it was able to store and use subsequently.

In an attempt to gain further insight into the mechanism of the action of antirachitic agents, one of us (A. W.) studied the calcium and phosphorus metabolism of these groups of rats in special metabolism cages. Group (1) was fed on the standard rickets-producing diet only. Group (2) had the same diet with the addition of 0.2 c.cm. of cod-liver oil per rat per day. Group (3) had no cod-liver oil, but the rats were radiated daily for ten minutes two feet from the mercury vapour lamp. The experiments lasted the usual period of four weeks. During this period the weekly intake of calcium and phosphorus was determined, also the calcium and phosphorus excreted in the urine and faeces. The difference between the intake and combined urinary faecal excretion gives the amount retained.

	Calcium.	Phosphorus.
The controls retained	0.37 gram,	0.15 gram
The cod-liver oil group retained ...	0.58 ,,	0.26 ,,
The mercury vapour lamp group retained	0.51 ,,	0.20 ,,

These figures are the total retentions for each group of rats over the full experimental period of twenty-eight days. It will be observed that both cod-liver oil and ultra-violet light increase markedly the retention of calcium and phosphorus. In no case, however, was there any excretion of phosphorus in the urine. This means that in the rat under these conditions the inorganic phosphorus content of the blood is below the threshold level of the kidney both in the rachitic and non-rachitic animal. Calcification occurs when the inorganic phosphorus in the blood is below the threshold level of the kidney but higher than that of the blood of the rachitic rat as shown by direct blood phosphorus determinations. It will be remembered that the diet used is rickets-producing in virtue of its poverty in phosphorus. Let us now consider the calcium excretion: this being in considerable excess is excreted partly in the urine and partly in the faeces. The proportion of the total calcium excreted found in the urine was as follows:

In the controls	34.2 per cent.
In the cod-liver oil group	73.8 ,,
In the ultra-violet light group	65.7 ,,

While in the controls or rachitic rats only one-third of the total calcium excreted finds its way into the urine, two-thirds being excreted in the faeces, in the cod-liver oil and ultra-violet light-treated rats which are free from rickets, the figures are reversed—two-thirds of the calcium is excreted in the urine and one-third in the faeces. These figures strongly support the view that the antirachitic body in cod-liver oil and radiant energy in the form of ultra-violet light both act in the some way in preventing rickets, and that this mode of action is a facilitation of absorption of calcium and phosphorus from the intestine into the blood stream.

It is interesting to note that it is not necessary to have a negative balance—that is, a greater excretion than intake—of calcium or phosphorus before rickets develops. So long as there is enough calcium and phosphorus absorbed to satisfy the minimal demand for ossification, rickets will not develop. When absorption falls below this level rickets develops.

Since these pages were written Steenbock and Black, and also Hess, have published papers claiming that rickets can be prevented in rats by radiating the diet with ultra-violet light. Steenbock and Black radiate the whole diet, and claim that feeding this to the animal prevents the development of rickets. Hess radiates an inactive oil—cottonseed oil—and claims that feeding a little of this with the daily ration prevents rickets.

Independent confirmation of this important work seems necessary, so we have carried out some experiments with that object in view. We adopted the technique we have used throughout this work. Four groups of rats were taken, each rat weighing about 40 grams. Group 1 were fed on Sherman and Pappenheimer's diet 84 previously described. The diet, after being made up into a stiff paste with distilled water, was spread on a clock glass in a thin layer and placed under a mercury vapour lamp twelve inches from the burner and radiated for half an hour. It was then given to the rats daily for twenty-eight days, when the rats were killed and *x*-rayed. They showed no signs of rickets.

Group 2 were fed on the standard diet, and in addition received 0.5 gram daily of an inactive linseed oil that had been radiated half an hour twelve inches from the mercury vapour lamp. Fresh oil was radiated for each day's ration. The rats were killed after twenty-eight days and *x*-rayed. They also showed no signs of rickets.

In Group 3 the patent flour portion of the diet only was radiated as described above; after mixing with the other constituents it was given to the rats. At the end of twenty-eight days these rats proved to be free from rickets.

Group 4 were fed on the standard diet, and in addition they received a daily dose of radiated hardened cottonseed oil. This oil, which is really a solid fat, is a commercial product that we have used for other experiments on account of its complete freedom from fat-soluble vitamin A. It is the liquid cottonseed oil of commerce that has been hardened by the technical process of hydrogenation. It was radiated in the following way: the oil was melted into a transparent quartz flask; this flask was attached to a slow-running motor and slowly rotated between two mercury vapour lamps, six inches from each lamp, and radiated for a period of eight hours. It was then given to rats of Group 4 in daily doses of 0.5 gram per rat. On killing the rats at the end of the twenty-eight days they all showed on *x*-ray examination severe rickets. This was surprising in view of the previous result with linseed oil. Two explanations are possible: (1) the prolonged period of radiation at a temperature of 40° to 50° C. had destroyed any active substance formed earlier; (2) the process of hydrogenation had destroyed in cottonseed oil a precursor or substance which, when aided by ultra-violet light, becomes active.

In Group 5 the calcium lactate, ferric citrate portion of the diet only was radiated for half an hour. The calcium lactate was radiated in the powder form, the ferric citrate and sodium chloride were dissolved in water so as to give a large surface for radiation. The radiated salts were then mixed with the patent flour and given to the rats in the usual way. The salts were radiated fresh daily. The rats were not protected from rickets. These results confirm the work of Steenbock and Black and Hess—that certain rickets-producing foodstuffs can be made antirachitic by radiation with ultra-violet light. Further investigations show that cholesterol, or a vegetable sterol, after radiation has very great antirachitic power.

Two other American investigators, McQuarrie and Kugelmasse, have published a preliminary account of an investigation in which they claim to have got startling results. Briefly, their work consists in making antirachitic substances like cod-liver oil or egg yolk undergo a process of oxidation, and during this process they claim that radiant energy is given off that will darken a sensitive photographic plate through a quartz screen but not through a glass screen. In other words, antirachitic substances undergoing a process of oxidation give off ultra-violet light. We have repeated their experiments but are unable to confirm their results or substantiate their claims. We have made many experiments in many different ways with different antirachitic substances, but have been unable to act on the most sensitive photographic plates either through quartz or glass screens when these were so arranged as completely to protect the photographic film from vapour arising from the substances in question. We found that certain samples of fused quartz, after being irradiated by ultra-violet rays, were able to act on a photographic plate. The quartz was rendered phosphorescent, and we think this may possibly explain why McQuarrie and Kugelmasse obtained positive results through a quartz screen and not through glass.

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TWO DISEASES DUE TO FASHION IN CLOTHING:

CHLOROSIS AND CHRONIC ERYTHEMA OF THE LEGS.

BY

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I.—CHLOROSIS.

THOSE of us who were house-physicians at hospitals in London about 1890 saw much of chlorosis in girls and young women. Making blood counts in such cases and prescribing Blaud's pills and other chalybeate preparations constituted a not inconsiderable part of the daily routine work on the medical side. Where are similar patients to be seen now? Did anyone suspect that the familiar features of chlorosis would ever almost completely vanish from the doctor's surroundings as they have? It is true that formerly in general practice countless troubles in women of all ages were attributed to "anaemia" without any blood count being made, and to doubt the correctness of the diagnosis was often to offend the patient. It is therefore quite natural that some modern physicians of a younger generation, experts in blood examination, especially those practising on the Continent, should question the alleged former frequency of chlorosis, suggesting that it was due to want of knowledge and insufficient or careless examination of the blood. But no one who was a house-physician in London about 1890 can admit the justness of such an accusation. Blood counts were made and the ordinary features of chlorosis were well known. Indeed, one could make the diagnosis with practical certainty when one passed girls and young women in the London streets, or even at the seaside, with the typical appearance of "green-sickness."

One remembers the characteristic pale, puffy face, the shortness of breath on climbing the stairs or other slight exertion, and, in the severer cases, obvious physical signs of cardiac dilatation. There were the out-patients who gave up their treatment at the hospital to take advantage of some charitable person's kind offer of a gratuitous holiday at the seaside. There they often tried to vie with their companions in "healthy" exercise and "enjoyment" of the open air, but with most unfortunate results. Chlorosis was certainly not due merely to insufficient food or want of open-air exercise. They soon returned to London and the hospital out-patient room, but in a condition far worse than when they left. They had lost during their holiday all that they had previously gained from the out-patient chalybeate treatment.

Some patients sought employment as cooks or helps in basement kitchens, so that they could avoid the frequent stair-climbing ordinarily required of domestic servants. In this way they escaped much of the dyspnoea on exertion, the "panting" on the stairs, and the "tea and bun" midday meal of many of the shop-girls of that period. They got plenty of meat, but often took very little green vegetables and fruit so as to save themselves from gastric flatulence—with the result that they increased their tendency to constipation, and often added to their other troubles recurring so-called "bilious attacks" and the kind of headaches largely due to intestinal autointoxication.

Psychasthenic and functional nervous symptoms in the more mentally active and (financially) "better-off" subjects

so often accompanied chlorosis that in private practice they came to be regarded as an essential feature of the disease, and such symptoms were frequently attributed to "anaemia" when there was no anaemia.

That chlorosis (the "chlorotic anaemia" of girls and young women) has greatly diminished or almost disappeared during recent times seems to be generally admitted by medical observers in England, the United States, and the European continent; but what was the cause of the disease, and why has it been passing away? Though various factors may have played a part, it seems now almost certain that the main exciting cause of the disease was the wearing of corsets, and that the gradual abandonment of tight-lacing has ultimately led to its almost complete disappearance. The anaemia of young women connected with mitral stenosis and hypoplasia of the heart and large blood vessels, to which Virchow[1] drew attention in 1872, was probably mostly not true chlorosis, and has not disappeared, but the patients have not the typical "puffy" appearance. It was perhaps O. Rosenbach[2] who, in 1895, first claimed that corsets were responsible for (true) chlorosis, and this opinion has been recently supported by Roch and G. Bickel[3] of Geneva, and T. Deneke[4] in Germany.

This explanation accounts for the following facts: (1) Typical chlorosis never occurred in boys. (2) Rather fat girls were more affected than thin girls; the former probably "squeezed themselves" more than the latter. (3) Prolonged rest in bed, where corsets were not worn, *always* made the patients better; it was, in fact, a chief method of treatment for bad cases. (4) Holidays at the seaside, with plenty of open air, often made the patients worse, probably because they overtired themselves and tried to look their best and thought that tight-lacing helped to make them more attractive. (5) Married life often had a good effect, probably in part because, at any rate in the poorer classes, it indirectly led to less tight-lacing. The male once captured, it was no longer so necessary to charm his eye with the slender waist which he had been trained to admire. (6) Chlorosis was absent (according to Deneke) amongst Persian and Japanese women, who did not use corsets. It was doubtless due to natural individual powers of resistance and compensation that chlorosis was not still more prevalent in the days when tight-lacing was customary.

II.—Chronic Erythema of the Legs.

A kind of chronic (indurative) erythema of the legs in girls and young women seems now to be becoming by no means very uncommon. It is usually admitted that true "erythema induratum" of Bazin is of tuberculous origin,[5] though perhaps the tubercle bacilli which give rise to it are not very virulent and the patients affected are fairly resistant to the graver forms of tuberculosis. Be this as it may, the form of erythema to which I am now referring is apparently not directly related to tuberculosis, and though it is a chronic *indurative* erythema of the legs in girls and young women—sometimes leading to diffuse thickening and sclerodermia-like hardening of the skin and subcutaneous tissue—it does not, like true "erythema induratum" of Bazin, lead to the formation of nodules and ulcers, unless as the result of local injuries.[6] The patches of erythema, which, at least at first, are temporary, disappear or diminish during warm weather and rest in bed; they may, however, progress to a stage of red or cyanotic hard ("brawny") thickening of the skin and subcutaneous tissue, and may occasionally diffusely and symmetrically encircle the lower part of both legs. The condition may become so serious and threatening as to necessitate repeated rest in bed for a few days, and may prevent the patient from carrying on her work.

Cases which I believe belong to this class have been demonstrated at the Royal Society of Medicine quite recently by S. E. Dore and A. W. Stott[7] (I have myself had the opportunity of noting the progress in their case) and by H. MacCormac.[8] Amongst slightly earlier accounts is that by G. N. Meachen,[9] who described it as one of "persistent erythema of an erythromelalgic type," apparently because the erythema and pain in the legs were relieved by assuming the horizontal posture.

That the condition is not yet recognized as a definite syndrome with a special name of its own is testified by a recent paper by S. N. Vendel,[10] headed "Erythema," with a note of interrogation, to signify the uncertain nature and etiology of the erythema. He and his colleagues in Denmark have observed about 75 cases during the past five or six years. The thickening may be marked, extending from a little below the external malleolus upwards, and the anterior and exterior aspects of the legs are chiefly involved. The affected skin is red or cyanosed, as if it had been subjected to Bier's artificial passive hyperaemia. The thickened tissues do not pit on pressure with a finger; the local pallor induced by the pressure disappears at once when the finger is withdrawn. The limbs feel cold, and the patients may complain of pain, tenderness, paraesthesia, or a sensation of heaviness in them. The condition is bilateral and more or less symmetrical, and affects females whose ages are mostly between 14 and 20 years. According to Vendel the condition, though it exists throughout the year, is most troublesome in the cold season. In about one-third of his cases flat-foot was present. In one case superficial varicose veins were present, and in one varicose veins in the popliteal spaces. No treatment proved satisfactory in his series of cases.

It seems to me that in these cases there must be a condition of persistent local atony of the blood capillaries, such as has been observed by Otfried Müller, Parrisius, and others, by the help of the skin microscope, in certain conditions of the skin and mucous membranes. Indeed, some (not all) cases are associated with a "chilblainy" or "weak" circulation; the defective circulation in the extremities may even amount to a condition of acrocyanosis. The patients are mostly fairly plump and there may be a kind of puffy fusiform swelling, not of the interphalangeal joints (as in some infective rheumatoid conditions), but of the phalangeal segments between the joints. In some cases menstruation has been delayed or scanty, with functional ovarian insufficiency or definite ovarian hypoplasia. Other cases have been associated with colonic stasis or intestinal autointoxication. H. MacCormac has suggested that the scanty covering of the legs now customary, by thin silk stockings only, from the upper edge of the boots or shoes to the lower border of the dress, is responsible for the erythema. S. E. Dore and some others support this view, and the condition did not attract medical attention before short dresses and thin silk stockings became generally popular.

If it be admitted that in certain persons a constitutional defect in the capillary circulation—a tendency to atony of the blood capillaries of the skin and subcutaneous tissues—may constitute a soil or basis favourable to the development of the true tuberculous "erythema induratum" of Bazin, one may suppose that in girls and young women with a similar constitutional capillary defect the local action of cold on the poorly clothed portions of the legs may give rise to more or less permanent atony of the superficial blood capillaries, leading in some cases to a red or cyanotic thickening of the affected skin and subcutaneous tissue. This would account for the temporary beneficial effect of warm weather and of a few days of rest in the recumbent position in a warm bed. An occasional relationship of intestinal autointoxication and sexual hypoplasia to defective capillary circulation in the extremities may likewise be admitted, but it is the action of cold as a local exciting cause that has mainly to be considered.

The reason why most girls and young women do not suffer from the local erythematous condition in question is doubtless that the cold is sufficient as an exciting cause only when it acts on the basis of a constitutional defect in the capillary circulation of the skin and subcutaneous tissue. Such a constitutional defect, first showing itself after puberty, might be allied to the constitutional basis which sometimes leads to true Bazin's erythema induratum. Similarly, as I have pointed out in the first part of this paper, it was probably only in girls and young women having another special kind of constitutional tendency (predisposition) that tight-lacing produced typical chlorosis. It would be interesting to ascertain whether the young subjects of chronic erythema in the legs ever develop true tuberculous erythema induratum of Bazin, and whether in later life they will tend more than others to develop hypostatic dystrophic

changes in the lower extremities, of the type of so-called "varicose ulcers," "varicose eczema," and "varicose pigmentation," associated or not with pronounced varicose veins.

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THE TREATMENT OF HAY FEVER.

BY

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IN popular parlance the term "hay fever" is used very loosely to include all forms of paroxysmal sneezing. In this article hay fever refers solely to the affection due specifically to sensitization to the pollens. The majority of cases are due to the grass pollens, and recur with great regularity from the end of May to the middle of July. A few cases, due to sensitization to the tree pollens, commence in April or the beginning of May. The identity of these should be discovered by means of the dermal tests before the season commences.

Sweet-smelling flowers and those which are highly coloured have heavy sticky pollens and are fertilized by insects; their pollens are not air-borne, and so have little effect in causing hay fever. The scent of these flowers will often provoke paroxysms in hay fever patients, but this can be disregarded in planning the treatment, as when desensitized to the grass pollens the patient's sensitiveness to the smell of flowers will disappear.

PREVENTIVE TREATMENT.

Sea voyages are effective, but sending patients to the seaside is of no use unless a guarantee can be given that the wind there will be from the sea. Avoidance of the pollen being, then, impossible, one of the following methods must be used to desensitize the patient.

(*a*) *Desensitization of the Patient by Small Doses of the Pollen.*—Judging by experience in desensitizing horse asthmatics, far greater trouble should be taken in using this method than is commonly observed. It would seem that we have to use up the patient's specific adzyme, as I have called it, by means of minute doses of the protein spread over a period of many months without at any time giving a large enough dose to excite the formation of more specific adzyme. The patient is tested with dilutions of the protein, and a dilution ten times weaker than that which gives an appreciable reaction on the skin is used. Starting with a dose of 2 minims of this, weekly or bi-weekly doses are given, increasing each dose by 1 minim until the next dilution containing ten times more pollen is reached. We do the same with this, gradually increasing the dose until a higher dilution is required. All this must be done very slowly, making frequent dermal reactions to see how the course of treatment is progressing. When the stronger solutions are used the doses should be increased very slowly indeed. It is essential that the dilutions used to treat the patient are actually those with which he has been tested; otherwise they are bound to vary in strength—first, because the grass flowers from which the dilutions are made, though duly weighed, may be wind-blown and so carry varying amounts of pollens; and secondly, because the strength may deteriorate considerably after it is made. The method of giving a few doses shortly before the hay fever season, and especially daily doses, may appreciably lessen the patient's hay fever, but for another reason: anti-anaphylaxis takes place. However successful this may be it fails, because it gives no protection for the next season. Before we can say that the patient is cured we must not only obtain freedom from hay fever but from treatment as well.

(*b*) *Desensitization by Non-specific Methods.*—Probably any protein would effect this purpose, but the danger of the patient being sensitive to them is so great, especially in the case of horse serum, as to preclude their routine use. In my experience the "mixed coliform vaccine" originally suggested by Danysz is the most effective. Though an autogenous vaccine is undoubtedly preferable, heterogeneous mixtures may be used. These should contain some 40 per cent. of *Bacillus coli*, 40 per cent. of coliform variants, and 20 per cent. of intestinal streptococci. Doses varying from and rising from 20 to 1,000 million of these organisms are injected hypodermically, once or twice a week according to the nearness of the hay fever season. I have had several patients who have had a course of this treatment four years ago and who have passed through subsequent seasons without hay fever and also without the inconvenience of the yearly course of treatment. Treatment with this vaccine should be commenced in April and continued well into the hay fever season. But it is almost equally effective when given later in the season. It will often stop hay fever even when violently active, though the permanent desensitizing power is best conferred by the early course.

These two methods should not be used together, for the pollen injections will defeat the objects of the mixed coliform vaccine.

(*c*) *Medicines* are of very little use in controlling hay fever. The calcium salts are those most favoured. I find great value in the use of collosol calcium, which should be given when the hay fever season is due to commence in 1/2 to 1 c.cm. doses intravenously.

(*d*) *Cauterization* of the nose is very useful for two purposes. If on examination of the nose before the hay fever season commences we find that the turbinals are covered with boggy swollen mucous membrane, cauterization should be undertaken to reduce them by scarring. The other use of the cautery is to touch the mucous membrane lightly and destroy some of the nerve endings and so lessen the extreme sensitiveness present. This should be done over the turbinals on either side, and particularly on the septum anterior to the bony outlet of the nose. With a blunt probe other tender spots can be searched throughout the whole area. I am in the habit of doing this cauterization about the middle of May, thus allowing just sufficient time for healing before the season commences.

SYMPTOMATIC TREATMENT.

(*a*) The patient should be placed in a cool dark room. The admittance of fresh air from the outside should be limited to the minimum, for the whole air is heavily laden with pollen. For the same reason the windows should be kept closed at night unless the warmth of the weather makes this impossible.

(*b*) The effect of the direct sunlight is so provocative of sneezing that dark glasses should be worn if the patient does not stay indoors. These should fit closely round the eyes, after the manner of motor goggles. Broad-rimmed hats and caps are often helpful.

(*c*) The patient is greatly assisted by taking steps to prevent the pollen passing on to the mucous membrane of the nose. Unfortunately, the worse the patient's hay fever is the more difficult it is to touch the nose without causing a paroxysm of sneezing. Simplest, perhaps, is a tube of vaseline with a long nozzle out of which sufficient can be squeezed just inside the nose. This can be pushed further up the nose by pinching that organ with the finger and thumb, assisted by sniffing it up. Liquid paraffin or olive oil may be used very frequently in a coarse spray.

(*d*) Various medicaments may be added to the paints and sprays to meet the symptoms. Adrenaline and menthol will constrict the blood vessels and so lessen the swelling of the mucous membrane, allowing the orifices of the various sinuses to regain their patency. Cocaine and its substitutes reduce the intense irritation of the nerve endings in the nose, and constrict the blood vessels, especially cocaine. Oily and greasy vehicles for these drugs soothe the mucous membrane and prevent fresh pollen getting to it.

(*e*) Similar drugs may be used for the eye symptoms. In educated people, who can be trusted not to use the drugs to excess, the instillation of a few drops of cocaine (4 grains) and adrenaline (3 drachms to the ounce) will not only help the eyes, but, by passing down the lacrymal duct, will also allay the trouble in the nose. Used in an atomizer these may be sprayed up the nose and also into the eyes. In prescribing these drugs some estimate must be made of how often the patient will use them and, more particularly still, the kind of spray he will use them in, likewise the viscosity of the ingredients of the solution used.

(*f*) A search should be made for any microbic invaders which are adding to the patient's discomfort.

(*g*) Considerable comfort is experienced by dipping the whole face into a basin of cool water at bedtime. If sufficient salt is added the eyes may be opened and washed in this. Keeping the lips and glottis closed some patients manage, by expanding the buccal cavity, to draw the solution into the nose and wash that at the same time. Such a washing often allows the patient to fall asleep with ease and comfort.

By these various methods much more can be done for the unfortunate sufferer from hay fever than was possible formerly.

RECTAL INJECTION OF ETHER IN WHOOPING-COUGH.

BY

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MANY methods are used in the treatment of whooping-cough; among the many drugs belladonna, opium, and quinine seem to be the favourites. Recently *x*-ray treatment has been suggested in America[1] and in England.[2] Vaccine treatment has also been tried on many cases.[3] Ether was first suggested in 1914 by Audrain, whose results were published in 1920.[4] He used 1 to 2 c.cm. injected intramuscularly three times a day. Since then several other workers have published their results; Panayotatou stated that the duration of the disease could be reduced to twelve days after starting treatment by a dose of 1.5 to 3 c.cm. of ether given intragluteally on alternate days.[5] Mason in America, who treated 26 cases in the same way,[6] had 60 per cent. cured and 24 per cent. definitely improved. He also tried ether by the rectum on four cases, using 6 c.cm. of a 40 per cent. solution of ether in olive oil. Half of these were successful and half failures.

Smith[7] has recently reviewed all the literature published since the war on the treatment of whooping-cough, but does not mention the rectal method of administering ether. It would seem that this is the first time that a large number of cases so treated has been put on record.

MODE OF ADMINISTRATION OF ETHER.

It has been the custom to administer the ether by subcutaneous or intramuscular injection. This is undoubtedly the most rapid method, but it is very unsatisfactory for children between the ages of 2 and 12. An enema by the rectum is much more suitable. The enema is painless—only two cases in this series complained of abdominal pain, rapidly passing off, and the majority of children raise no objection to the repetition of the treatment. The only difficulty lies in getting a certain number of cases to retain it.

When ether was given by injection I always used the intragluteal route. The dose was 5 to 10 minims of the ordinary anaesthetic ether. For the administration of an enema I used a full-sized male rubber catheter, attached by a small glass tube to a larger-bored rubber tube with a funnel at the other end. The ether was mixed with an equal amount of olive oil, the dose given being 1 drachm of the mixture for every year of age. If anything an excess was given, and if the symptoms were severe and the enema well retained 1 or even 2 extra drachms were given. Before administering the enema the skin round the anus was well smeared with vaseline and the catheter then passed up 3 to 6 inches. The ether mixture was passed into the funnel and allowed to flow into the rectum by its own weight. The rate of flow can be watched through the glass tube connecting the catheter to the tube. This also serves as a gauge to see whether there is anything left in the tube. When all the enema has been run in, the catheter is rapidly withdrawn and usually none leaks out. Ether appears in the breath about five minutes after the enema has been given and can be detected during the next twenty-four hours. It has never in this series caused any digestive upset or pulmonary trouble. In many cases it did not begin to have any beneficial effect till after the second administration, and in severe cases actually aggravated the symptoms at first.

I treated the first 25 cases with ether alone without drugs and the next 25 with ether and drugs; the latter improved so much more rapidly than those treated with ether alone that the remainder of the cases were always treated with both. Of drugs I tried phenazone, bromides, belladonna, iodine, and opium in various combinations. I met with successful results with all these drugs, but belladonna was the most generally successful. In the cases summarized in this article only four enemas or injections were given—in some cases one each day and in others on alternate days. There would seem to be no advantage in resting for forty-eight hours nor any need to limit the treatment to four doses.

RESULTS.

After December 1st, 1924, all cases of whooping-cough coming to the casualty department were treated by ether. In this way the results of 86 consecutive cases can be recorded. Of these, 28 were treated by injection and 58 by enema. Of the former, 11 gave up the treatment before the course was completed, but, with the exception of 3, the results as far as they went were satisfactory. Three cases must be classed as failures, and the remaining 14 were successful.

Of those treated by enema 14 gave up the treatment owing to the parents' objections or because the child would not allow the administration of the enema. Of the remainder, 13 were failures and 31 successful. Of the children successfully treated, the earliest had been coughing for four days and the longest for more than four weeks. This case was a girl of 6 who had been coughing for about a month when first seen. She was having about forty attacks during the twenty-four hours, and vomited in nearly half of them. The appetite was very poor, and there were frequent attacks of epistaxis. The first two enemas contained 3 drachms of ether each, and the second two 3½ drachms. The breathing improved after the second, and the whooping completely stopped after the fourth. One week later the vomiting also stopped and the appetite improved. The child was putting on weight at the rate of an ounce a week, and reported satisfactory progress at every subsequent visit. No more epistaxis occurred after treatment was started.

In addition to these cases of pertussis treated in the casualty department, an outbreak among the in-patients enabled me to try the ether treatment on a number of cases under constant observation. Of these, 12 were treated by enemas and 5 by injections. Nine of the former were successful; the paroxysms were at once considerably diminished in number and violence, and ceased within a few days. Three were failures. Two of these patients were already under treatment for bronchopneumonia and the third for anterior poliomyelitis. The observations of the nursing staff bear out what the mothers reported to me in the out-patient department. Of those treated by injection 4 were successful and 1 a failure, though benefited.

I have had no success with ether as a prophylactic, though probably, if given when a suspicious cough commences, the disease will be aborted or rendered very mild. It is perhaps worth noting that the only cases in the ward which remained unaffected and were not given any prophylactic treatment were two cases of coeliac disease. They were in the ward when the original case was admitted, and at the time of writing, three months after the first "whoop" was heard, have no signs of the disease.

The total number of cases treated by me with ether may be tabulated thus:

Method.	No. of Cases.	No Result.	Successful.		Failures.	
			No.	Per Cent.	No.	Per Cent.
Intramuscular ...	33	11	18	55.5	4	12.1
By the rectum ...	70	14	40	55.5	16	22.8
Total	103	25	58	55.5	20	19.4

In holding a case to be successful I have laid stress on the following points: (1) the number of attacks of paroxysmal coughing; (2) the violence of the coughing; (3) the number of times that vomiting is caused; (4) absence of complications, or, if any, with only mild symptoms.

I have to thank Dr. Beatty, physician to out-patients, for permission to publish these notes.

SUMMARY.

1. Drugs still hold their place in the treatment of whooping-cough. Of these belladonna seems to be the most useful.

2. Ether will check the disease completely in 25 per cent., fail completely in 25 per cent., and be followed by considerable improvement in 50 per cent.

3. Ether neither causes nor prevents complicating bronchitis; bronchitis already present is not a contraindication to its use.

4. The method of administration seems to be of no importance provided the dose is large enough.

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HAEMOGLOBINURIA FOLLOWING MALARIAL TREATMENT OF QUATERNARY SYPHILIS.

BY

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SCHILLING and Jossman[1] have reported an instance in which haemoglobinuria occurred following malarial treatment with *Plasmodium vivax*. The temperature rose seven days after it had returned to normal; quinine (8 grains) was given, and almost immediately red, followed by black, urine was passed. The following day the urine was clear, but the patient was jaundiced. The temperature then fell gradually to normal during a period of about ten days. The authors were not able definitely to exclude paroxysmal haemoglobinuria, but believed that the case was one of blackwater fever. The following case is described as another example of haemoglobinuria following malarial treatment.

A man, aged 56, was given a subcutaneous injection of defibrinated blood infected with *P. vivax* on October 25th, 1923. Twelve days later febrile paroxysms occurred and the patient was allowed to undergo nine. The last rigor took place on November 22nd. A course of quinine bisulphate was commenced the following day. Two doses of 10 grains were given on each of the first three days and one dose of the same quantity on each of the following fourteen days, making a total of 200 grains. In addition, the following course of neokharsivan was given: one dose of 0.3 gram, one of 0.45 gram, and four of 0.6 gram. The last injection was given on December 30th, 1923. The temperature was recorded every four hours for fifty-eight days after the cessation of the malarial paroxysms. On only seven days was it above normal; the highest temperature recorded (100.4° F.) followed an injection of neokharsivan. The temperature was then observed twice daily for twenty-eight days and no record above normal was noted. On the twenty-ninth day (February 18th, 1924), eighty-eight days after the last malarial paroxysm and seventy-one days after the last dose of quinine, the morning temperature was 98.8° F.; it was then recorded every hour. At 2 p.m. it had risen to 101.8° F., and at 3 p.m. to 103.6° F.; it then began to drop in a staircase manner, reaching 99° F. at 2 a.m. on February 19th, and normal at 10 a.m. on that date. A rise to 99° F. occurred at 2 p.m. on the same day, but thereafter the temperature was normal or subnormal, the records being made every four hours for twenty-one days, and then twice a day for forty-seven days.

On the morning of February 18th, the day upon which the highest fever occurred, the patient was cyanosed and complained of feeling cold, but no definite rigor occurred. At 3 p.m. profuse perspiration appeared. The pulse rose to 100, and the respirations to 20. On this day dark, very nearly black, urine was passed; the urine passed on the following day was red, and the colour gradually became normal. Red cells were present in the urine on February 22nd. There was bacilluria on this date, but no tubercle bacilli were found. There was no vomiting, hiccup, or jaundice, but abdominal pain was marked.

A blood film taken on February 18th showed a large number of anaemic or pale red cells but no shadow cells. Spherocytes were never observed, nor was punctate basophilia or polychromasia detected in daily films from February 18th to 26th. Malarial parasites were not found.

The attack from which this patient suffered might have been due to blackwater fever or to paroxysmal haemoglobinuria. Both diseases can be brought on by cold. The daily minimum temperatures of the outside air showed a marked fall shortly before the onset of the attack. From the fifteenth to the sixth day before the attack the minimum temperature averaged 33.6° F., the lowest record being 31° F., and the highest 37° F. From the fifth to the day previous to the attack the minimum temperature averaged 22.6° F., the lowest being 19° F., and the highest 26° F. There was a pronounced fall of the indoor temperature on the night of February 16th-17th, the temperature of the ward in which the patient slept being 48° F. at midnight and at 2 a.m. on February 17th. The ward temperatures are recorded at 2 a.m., 7 a.m., noon, 7 p.m., and midnight, and 48° F. was the lowest temperature that occurred during the days immediately previous to the attack, 52° F. being the next lowest. The fall of the temperature to 48° F. was very sudden, there being a drop of eleven degrees in five hours. The rise after was gradual. The low temperature occurred about thirty hours before the onset of the attack of haemoglobinuria.

The fact that no quinine had been given for several weeks before the onset of the haemoglobinuria is of no assistance in diagnosis, for, although large numbers of attacks of blackwater fever are precipitated by this drug, many are not. Thomson[2] describes cases which had had no quinine for several months before the onset of blackwater fever.

Turning now to the facts in favour of the diagnosis of blackwater fever, the number of attacks which occurred is important. If the patient suffered from paroxysmal haemoglobinuria it was possible that several attacks might occur over a prolonged period. The attack was, however, the only one during a total observation period of 679 days in Claybury and West Park Mental Hospitals. The patient was under observation for 317 days before the attack.

The presence of red cells is against the diagnosis of paroxysmal haemoglobinuria but not of blackwater fever. J. G. Thomson[2] has reported its occurrence in ten cases, and states that other writers have also observed it.

By the courtesy of Dr. N. Roberts, medical superintendent of West Park Mental Hospital, I have been enabled to perform the Eason-Donath-Landsteiner test for the autolysin of paroxysmal haemoglobinuria in the blood of this patient. In this disease haemolysis of the red cells occurs if a mixture of red cells and serum is cooled to 0° C. for five minutes and then placed at 37° C. for one hour. In this case haemolysis did not take place. This is against the diagnosis of paroxysmal haemoglobinuria, although it should be added that the test was not performed until March 4th, 1925.

The following facts suggest the diagnosis of paroxysmal haemoglobinuria. Jaundice is a very prominent symptom of blackwater fever, but it was absent in this case. J. G. Thomson[3] believes, from the study of the disease in Rhodesia and from the literature, that blackwater fever is due to a previous infection with *P. falciparum*. He states, however, that the disease may occur in persons after a relapse of benign tertian malaria, but he believes that in those cases there has been a previous infection with *P. falciparum*. This species is exterminated by quinine, and *P. vivax* causes the relapse. In the patient whose case is here recorded there was no history of previous malaria or

blackwater fever. The blood inoculated could not have carried a double infection of *P. vivax* and *P. falciparum*, for the strain had been passed through four persons before the case under review was inoculated. Since then sixty-eight inoculations have been performed with the same strain of parasite at Claybury Mental Hospital, and it has been used by other mental hospitals. Colonel S. P. James has also used the strain for mosquito inoculations. No malignant parasites have been found. The strain must therefore be a pure strain of *P. vivax*.

Yamakami[3] has found that about 25 per cent. of tertiary and congenital syphilitics have the cold haemolysin in their blood. It is therefore probable that it might be present in a case of quaternary syphilis. Although the Eason-Donath-Landsteiner test was negative, it must be remembered that the test was performed a long time after the attack of haemoglobinuria.

The diagnosis of this case is therefore difficult, but on consideration of the detailed report of J. G. Thomson on blackwater fever it would appear that it is probably a case of paroxysmal haemoglobinuria.

In conclusion, I wish to thank Dr. J. S. Harris of West Park Mental Hospital for his assistance. For permission to publish records from Claybury Mental Hospital my thanks are due to Dr. G. F. Barham, medical superintendent.

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X RAYS IN THE DIAGNOSIS OF ORGANIC DISEASES OF THE COLON.*

BY

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In estimating the value of radiology in the diagnosis of organic diseases of the colon, it is necessary to compare it with the other available methods of confirming, or otherwise, suspicions aroused by a consideration of the patient's history. Apart from the ordinary physical examination of the abdomen and digital examination of the rectum, the only direct means of investigating intestinal diseases are the *x* rays, investigation of the stools, and sigmoidoscopy.

For the purpose of this communication my colleague, Dr. J. F. Venables, has analysed all the cases of the kind which have come under our observation at New Lodge Clinic during the last four years. In each an *x*-ray examination has been carried out by Dr. P. J. Briggs, the stools have been investigated by Dr. J. H. Ryffel and Dr. J. F. Venables, and I have inspected the rectum and pelvic colon with the aid of the sigmoidoscope. The relative value of these different methods can thus be estimated, but it is at once clear that all are valuable and should be systematically used, as it is generally impossible to tell beforehand which will give the most important information in a given case, whilst in many the final diagnosis is only reached by a consideration of the symptoms and the results of the physical examination in the light of the information obtained—whether of a positive or negative character—with the *x* rays, the investigation of the stools, and sigmoidoscopy.

The series of cases includes 13 of carcinoma of the colon, excluding growths of the rectum which could be felt on digital examination, 5 localized adhesions of the colon, 5 cases of diverticulitis, 3 strictures following ulcerative colitis, 1 case of tuberculosis of the caecum, and 1 of tuberculosis of the last three inches of the ileum.

1. *The X Rays.*

(*a*) An *x*-ray examination after an opaque meal never reveals an obstruction of the colon which cannot be recognized with an opaque enema, but it is useful in the diagnosis of obstruction of the small intestines, especially near the end of the ileum. In only 2 out of 12 cases of cancer of the colon was anything abnormal seen after an opaque meal.

(*b*) As I first demonstrated in April, 1908, an opaque enema shows the presence of obstruction at a comparatively early stage, often long before localizing symptoms develop. But a negative result does not exclude a growth of the colon; in 1 of the 9 cases in which an opaque enema was given and in 3 earlier cases a growth was found, though an opaque enema had failed to show the slightest abnormality.

An opaque enema is the only certain clinical means of recognizing diverticula of the colon. This is of great importance, as it may be impossible, even during an exploratory operation, to distinguish between a growth and an inflammatory mass secondary to diverticulitis. In one case in which we had found that symptoms of obstruction were due to diverticulitis, a recurrence of symptoms two years after the mass had been removed was shown by an opaque enema to be due to carcinoma developing in connexion with a diverticulum of the iliac colon, which had apparently escaped notice at the original operation.

Until recently I believed that ulcerative colitis never led to stricture on healing. I have, however, now seen 4 cases out of a series of 17, in which delayed recovery was due to narrowing of the colon, which was discovered with the *x* rays; in two of these the whole pelvic colon was shortened and narrowed, but complete recovery ultimately occurred without surgery. In the third case a long stricture was found in the transverse colon and a short one in the descending colon, and in the fourth a long stricture of the transverse colon and a kink of the pelvic colon; in neither were any symptoms pointing to obstruction present, but the *x* rays showed the necessity of short-circuiting operations, without which recovery would have been impossible. Delayed recovery in cases of ulcerative colitis, whether an appendicostomy has been performed or not, is thus an additional indication for *x*-ray examination.

2. *The Stools.*

Microscopical examination may show the presence of blood corpuscles and pus in stools which look normal to the naked eye. Much more frequently blood can only be recognized by chemical means and by the discovery of haematoporphyrin or acid haematin with the spectroscope. In 4 out of 12 cases of growth of the colon the blood was obvious; in all of the others occult blood was found in every stool. For some unknown reason it appears to be present with equal constancy when obstruction is caused by adhesions; thus obvious blood was present in 1 and occult blood in the remaining 4 of our cases of this kind; occult blood was also found in the cases of ileal and caecal tuberculosis. In 3 cases suspicious symptoms and the presence of occult blood induced us to advise operation, though the *x* rays had shown nothing abnormal; in 2 of these the symptoms were referred to the stomach and achlorhydria was present, and we diagnosed carcinoma of the stomach, so that an opaque enema, which might have led to a correct diagnosis before operation, was not given.

3. *The Sigmoidoscope.*

The sigmoidoscope is so invaluable in diagnosis that every practitioner and physician should learn to use it himself in cases of supposed colitis or unexplained disturbance in the functions of the bowels. With its aid a growth of the upper part of the rectum or lower part of the pelvic colon can be recognized before it can be felt—often before a barium enema shows any definite abnormality. By means of the sigmoidoscope I have twice been able to diagnose early malignant degeneration of a polypus before the wall of the bowel itself had become involved.

I hope that one result of this discussion may be to induce surgeons to avail themselves more frequently of the assistance given by a thorough investigation before embarking on an exploratory laparotomy. I have had the disappointment of learning that a patient, in whom we had diagnosed a growth of the splenic flexure, had had his appendix removed by a distinguished surgeon, whom he consulted without telling his own doctor, to whom we had sent our report; eighteen months later he was operated upon a second time for acute obstruction caused by an inoperable growth of the splenic flexure.

*Contributed to a discussion in the Subsection of Proctology of the Royal Society of Medicine, May 13th, 1925

PARKINSONISM TOGETHER WITH THE "APACHE TYPE" IN ENCEPHALITIS LETHARGICA.

BY

ALLEN HANCOCK, *M.C.*, M.R.C.S., D.P.M.

AMONG the many late manifestations of encephalitis lethargica those met with in children and young adults are most striking and varied, and victims of this disease are found attending the out-patient department of most hospitals in increasing numbers. Whether such late manifestations are sequelae of the disease is doubtful; it seems more probable that they are rather the effects of a still active virus living in the nervous system, like that of syphilis—a view held by Netter, Mott, Wimmer, and others. A classification by Hall has put such juvenile cases under one of the following classes: (1) idiot type; (2) Parkinsonism; (3) apache type; (4) naughty child type. Of these Nos. 2 and 4 are especially common, and there are many of type 4 which nearly approach the true apache type, although not really bad enough in their moral defect. Such cases, however, cause great anxiety in their homes, and institutional care is usually called for. It is agreed by observers in this country, and on the Continent, that a combination of the apache type with Parkinsonism is of rare occurrence, and it is for this reason that it is felt that the following case, in which certification was necessary, may be of interest.

A labourer, aged 19, had a history of "influenza" in November, 1922, was "ill in bed for ten weeks"; "would sleep all day," and "has been sleepy ever since." After this illness he showed great moral deterioration. His report from school was an excellent one, and in it he was described as "diligent, attentive, regular, punctual, and respectful." After leaving school he was described as "of steady habits, hard-working, and a pleasant lad." In June, 1924—that is, nineteen months after his acute attack—he began to change in his attitude towards his relatives, who say that he "became bad-natured, excitable, punched and kicked his mother and his small sister, threw knives about." In October, 1924, he was admitted to a mental hospital, his certificate stating that he had been charged at a police court with making a murderous attack on his mother. Inquiry showed that this was the third time he had been before the court on a similar charge. On the first occasion he was "remanded for medical examination"; on the second he was given "fourteen days' hard labour"; while on the third he was again remanded and sent to hospital, where he was certified.

On admission he was dull, retarded, sullen, and suspicious, and fabricated freely when his past was discussed. He was irritable in manner and abrupt in speech, and usually answered questions shortly and in an explosive manner. He was well nourished, pale of face, and had a greasy skin. His face was fixed and expressionless, his head bent forward towards the ground. Heart, lungs, and kidneys appeared normal. The knee-jerks were brisk, equal; plantars, flexor response; abdominal reflexes, present and equal. Pupils: react to light and accommodation, equal, regular outline, and not eccentric; no diplopia; movements of eyes complete. Ophthalmoscopic examination revealed no abnormal findings.

His gait was slow and stiff, and, when walking, he showed an absence of the normal swing of the left arm, which was held rigidly at the side. Myoclonic movements of the right shoulder were present, as were rapid blinking of both eyes. When agitated he showed frequent and regular sucking of the teeth, quite different from that observed in certain people when "on the defensive." His mother states that all these movements were not present prior to his illness. No abnormal sensory changes were detected. As is generally found in this disease, examination of the cerebro-spinal fluid showed no marked changes. It was clear; there was slight increase of pressure; Pandy's test was negative; protein not above 40 per cent.; the Wassermann test was negative; there was no excess of cells; Lange's test 0001110000; sugar 0.05 per cent.; chlorides 0.71 per cent.

Since admission he has shown some improvement at times, but remains bradyphrenic, rather slow and explosive in speech, and markedly bradykinetic. The Parkinsonian facies persists, but he has shown no violent tendencies and his behaviour has been satisfactory, although he has always been irritable and abrupt when addressed or examined.

The history of this case goes to show that this distressing disease is one that may raise difficult questions from a medico-legal point of view.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

HYDATIDIFORM MOLE.

HYDATIDIFORM mole is sufficiently uncommon to make the following case appear worthy of record.

The patient, aged 22, was admitted to a nursing home on October 26th, 1924; she gave a history of first pregnancy dating from about the middle of June. She had been losing blood for rather more than two weeks, and had been kept in bed under medical supervision, the case apparently being one of threatened miscarriage. On admission, after an uncomfortable journey of about forty miles by train and car, the pulse was 80 and the temperature 97.6° F. There was a slight brownish discharge not accompanied by pain. The uterus was enlarged to an extent corresponding with the history. The cervix, which was high up and quite soft, was only slightly dilated. The ovaries appeared normal. On October 28th an anaesthetic was administered and the cervix dilated. Pituitrin and quinine were given and the uterus massaged, but expulsion did not result. On October 30th the cervix was further dilated under an anaesthetic and the uterus carefully emptied of its contents—a vesicular mole. The patient made an uninterrupted recovery.

With regard to the frequency of this complication of gestation the figures of different observers vary from 5 in 4,000 pregnancies (=1 in 800) given by Engel, to 1 in 20,000 recorded by Madame Boivin. At the Rotunda Hospital, Dublin, in a series of 46,700 pregnancies the condition was found 22 times (=1 in 2,122.72); Fairbairn considers the average incidence to be 1 in 5,000. The condition is found most often in multiparous women towards the close of the child-bearing period.

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CONGENITAL FAMILIAL JAUNDICE.

THE note by Dr. T. R. Thomson on congenital familial jaundice, in the JOURNAL of January 10th (p. 72), prompts me to record a similar family history from my own practice.

The father and mother both belong to families of two only. Neither knows of any family tendency to jaundice of the newborn, haemolytic jaundice, or haemophilia. Their ages are now 38 and 34 respectively. The history of their children is as follows:

1. Girl, born August, 1911. No jaundice; healthy.
2. Boy, born April, 1913. No jaundice; healthy.
3. Girl, born March, 1916. No jaundice; healthy.
4. Boy, born March, 1920. Jaundice from second day. Haemorrhages (of blood that did not clot) from umbilicus and bowels, beginning on eighth day. Died on tenth day.
5. Girl, born June, 1921. Jaundice from birth. Similar haemorrhages, beginning on eighth day. Died on tenth day.
6. Girl, born June, 1922. Slight jaundice for a few days. Survived; healthy. For four months prior to the birth of this child I got the mother to take calcium (syrup. calcii lactophos. ʒss daily).
7. Girl, born December, 1924. Jaundice from second day. Haemorrhages from axilla and bowel beginning on eighth day. Subcutaneous ecchymoses over the whole body. Died on the fourteenth day.

The last baby was given 1 grain of calcium chloride every three hours from the second day, and an injection of 2 c.cm. of haemoplastin (P. D. and Co.) on the thirteenth day. The latter had not a fair trial. I had to get it from London after trying Glasgow unsuccessfully, and so lost a few days after making up my mind to use it. The mother had no ante-natal treatment, for a double reason. Owing to a housing difficulty and the possibility of having to leave the district, she did not engage me till five or six weeks before her confinement was due. I had—and still have—doubt as to whether the fact that the sixth child survived was really due to the prolonged treatment of the mother with calcium, and for the few weeks remaining it did not seem worth while to commence it again.

The age of the mother makes it probable that there will yet be opportunity of testing the effect of the calcium treatment. I have advised her that if she becomes pregnant again she should take it throughout the whole period of gestation.

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MELAENA NEONATORUM TREATED BY INJECTION OF PATERNAL BLOOD: RECOVERY.

THE reports which have appeared recently in the BRITISH MEDICAL JOURNAL of the successful treatment of melaena neonatorum by injection of paternal blood made me think it worth while to record the following case.

On March 27th a multipara was delivered of an apparently healthy female child after a normal labour. I was called in on March 29th, at 1.45 p.m., to see the baby, who had been losing blood by the rectum almost continuously since 3 a.m. The child was blanched and cold. There had been no vomiting of blood. I withdrew 10 c.cm. of the father's blood and injected it deeply into the gluteal region of the child. While making the injection I noticed the free discharge of dark blood from the bowel, due to the child's straining because of the prick of the needle. Next morning there had been no more haemorrhage, and no further injection was necessary—a point to be noted, as one case reported required as much as 40 c.cm. of paternal blood.

The child's weight at birth was 8 lb. 4 oz. On March 31st it weighed 7 lb. The weight on April 19th was 8 lb., and the child is doing well.

There is nothing to note in the family history; there are seven other children, all healthy. The mother, however, tells me that prior to and during her pregnancy she had been living on a staple diet of bread, tea, and margarine, because of the unemployment of her husband.

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MITRAL STENOSIS IN PREGNANCY: CAESAREAN SECTION.

DR. GUY BELLINGHAM SMITH'S article, "The Ante-natal Clinic" (JOURNAL, March 7th, p. 440), induces me to publish a case of mitral stenosis in a pregnant woman on whom I performed Caesarean section some three years ago.

I attended the patient as a child for acute rheumatism, and during her teens I frequently gave her digitalis on account of attacks of auricular fibrillation. She married in the early twenties and became pregnant. During her pregnancy she frequently required digitalization for attacks of auricular fibrillation with orthopnoea. I had a consultation with a colleague, Dr. Frank Hichens, and we decided that the best treatment, for both mother and child, was Caesarean section at term. We agreed that, if pregnancy went to term, a prolonged etherization with more or less accouchement forcé would be more dangerous than the short etherization necessary for a rapid Caesarean section.

Neither mother nor child caused any subsequent anxiety, and both are alive and well to-day. This method was adopted only after seeing many painful cases of decompensation (cardiac) in pregnancy and labour.

Camborne, Cornwall. JOHN H. TONKING, M.B.Lond.

RETROPHARYNGEAL ABSCESS: SECONDARY HAEMORRHAGE: LIGATURE OF COMMON CAROTID: RECOVERY.

A MAN, aged 24, was admitted into the hospital with a history of dysphagia for fourteen days and fever. A tender mass was felt on the left side of the neck, which bulged visibly. The temperature was 103° F. and the pulse 115. Chloroform was administered, and, as the incision was being made, he suddenly ceased breathing; judging from his colour he was suffering from respiratory embarrassment. Meanwhile he had regained consciousness and his respiratory distress was such that a high tracheotomy was instantly performed. This gave him immediate relief; the anaesthesia was resumed and the abscess evacuated. A drainage tube was inserted but replaced next day by gauze drainage. No pus was formed after the fourth day, and the temperature and pulse fell to normal. All went well till the seventh day, when blood was found pouring through the dressing. A thorough search was made for the bleeding vessel without success. As the bleeding continued the left common carotid artery was ligated. In a week he was sufficiently well to return home.

P. K. LIANG.
C. H. LEI.
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Reports of Societies.

RADIATION THERAPY.

THE discussion on radiation therapy in the Section of Electro-Therapeutics and Radiology of the Royal Society of Medicine was resumed on May 15th, Dr. STANLEY MELVILLE presiding. The opening of the discussion on March 20th was entirely occupied by the introductory papers of Dr. Gilbert Scott and Dr. J. H. Douglas Webster (see BRITISH MEDICAL JOURNAL, March 28th, pp. 596 and 601), who on this second occasion briefly recapitulated their points.

Dr. N. S. FINZI said that *x*-ray treatment was in a state of some uncertainty, but until recently he was not aware that there was any doubt as to the natural history of new growths. Dr. Gilbert Scott had expressed the view that all new growths were general in origin, with local manifestations. He had heard only one other radiologist express that view, and he had imagined that nobody took him seriously. All surgeons and the majority of radiologists would certainly be of opinion that neoplasms were originally local and only subsequently became generalized. He wished that Dr. Scott would tell those present whether his general treatment of a case of carcinoma had ever proved successful in the sense that the patient had lived two, three, or more years afterwards. All radiologists were able to point to cases which had remained well for five or ten years. All his (the speaker's) own cases which had remained well for a long period after *x*-ray treatment were cases of sarcoma; he had also cases of carcinoma which had remained well for a long period, but these had been treated by radium or by a mixed method (radium and *x* rays). It looked, therefore, as if the softer radiations would answer the purpose in sarcomas, but that in carcinomas, and especially in epitheliomas, a harder radiation was necessary. Lately in Paris he had seen a series of cases, proved by sections to be cases of epithelioma, in which, following radiation treatment, the growth had disappeared for from two to five years. These had been treated at the Radium Institute in Paris by the use of filtered radium and filtered *x* rays. The filtration in the case of the *x* rays was on a scale never attempted in this country—2 mm. copper—and a current of 200 kilovolts was used. In the speaker's own experience, local treatment, provided an area of sufficiently wide extent were taken, was successful in a certain number of cases—not in all, because the methods had not yet been absolutely mastered. The local treatment of metastases was also successful. Lymphosarcoma in particular was one of the growths which responded readily to any type of radiation; the less penetrating radiations were often sufficiently effective in this condition. But the hard or more penetrating radiations had given the radiologist the power of getting effective radiant action at the seat of the disease without damaging the intermediate tissues to any extent, although, of course, it was always possible that those tissues might be damaged by wrong technique or careless work. It was also necessary to remember that with these very penetrating radiations there was a late effect, appearing, in some cases, three or four months after treatment, even though nothing had been done in the interval, and this fact had to be brought into the reckoning when it was proposed to use other treatment later on. With intensive doses radiation sickness was likely to occur; the upper abdomen could not be irradiated without getting radiation sickness. But, apart from that area, he found radiation sickness occurring but seldom now in his own practice; he had avoided it by thorough ventilation of the room, and by getting rid of corona discharges in the neighbourhood of the tube, and of ozone and nitrous oxide as far as possible. In cases likely to have sickness the administration of chloretone was helpful. Another precaution was to refrain from giving too much radiation at one time. He had spread treatments over several days, and even weeks, and yet had got an intensive dose. His tendency was still to push the radiation higher and higher. He treated certain cases with rays of low penetration, but the results he obtained with the higher penetrations seemed to him infinitely better.

Professor SIDNEY RUSS said that the differentiation which Dr. Gilbert Scott had made between direct and indirect action needed to be borne in mind. It was not difficult to get proof of indirect action. He wondered whether the rather large doses which it was customary to give in deep *x*-ray therapy were really necessary. The dose which was necessary to prevent the growth of the cell was perhaps not the most useful criterion for clinicians to take; it was also necessary to take into account the resistance which the individual might put up to the growth. Radiologists should endeavour to settle amongst themselves, not the maximum dose which they dare apply, but the minimum dose consistent with beneficial effect. He could not help feeling that the use of the more penetrating rays had gone ahead without sufficient experimental warrant. The use of these penetrating rays required just as much experiment beforehand as *x*-ray treatment on what might be called moderate lines had received.

Dr. ROBERT KNOX spoke of the nature of tissue response to radiation. He said that the chief point to grasp at the outset was that the problem was not a strictly physical one. It was useless to pursue a chase after higher and higher voltage as a solution of the problem. The apparatus which radiologists now had at command was sufficiently powerful to give radiations of such quality and quantity as would act upon and kill any tissue in the human body. Radium, which gave the most penetrating radiations at present known, had been used in sufficient quantities to test that point. But the fundamental considerations in tissue changes were the type of cells and their responses, the phase of activity at the time of exposure, and the fact that in treatment of disease the response and action of the normal tissues was of vital importance. The biological unit, which at the same time was a unit of structure and a unit of function, must dominate the consideration. After describing some cases, Dr. Knox expressed the view that the radiation technique of the future would change very considerably, and that some development on the lines suggested by Dr. Scott in his paper would follow. He did not suppose that direct and local treatment would ever be discarded, but he did look to a much wider distribution of the area of treatment in a case of carcinoma. He also urged the value of the information derived from blood counts. If observations were made carefully enough, information could be obtained from the blood which was available in no other way. All cases submitted to any kind of radiation treatment should have very careful blood counts made. He also recounted a case which bore out the point that it was possible to sensitize a patient to a course of radiations to such an extent that if a dose of another quality, representing a drop in the penetration value, were given, a very different response was immediately manifested.

Dr. W. MITCHELL rather quarrelled with the term "prophylactic treatment," because, strictly speaking, none of the cases exhibited to the Section were cases of true prophylaxis. He described one case of a woman sent to him two years ago with carcinoma affecting both mammary regions. In one region there had been operative interference, and the results of radiation treatment following operation were so encouraging on that side that he asked the surgeon to remove the other breast. This woman was comparatively well to-day, although not cured; she was given an occasional dose still, with 0.5 mm. zinc filter, and she had no internal recurrences. In sarcoma cases he had had some excellent results, including sarcoma of the cricoid process with secondaries in the neck. Under deep radiation treatment, using 0.5 mm. filter, the condition cleared up in a remarkable way.

Dr. F. HERNAMAN-JOHNSON found himself in general agreement with Dr. Scott. He wanted to consider the duty of the radiologist, not in regard to those cases in which the surgeon had admitted failure, but those in which the surgeon thought the operation most favourable, and, indeed, believed that by surgery alone the disease had been eradicated. Here was a patient who, after operation alone, might expect to have good health for at least two or three years, and might live for an indefinite number of years. Anything that the radiologist did should be with the object of improving the health of that patient from the very start. The radiologist might be justified in taking various risks when he was treating a case which the surgeon had abandoned in despair, but when the disease appeared to have cleared up after operation, and he did not know that any vestige of disease remained, he must be very careful to do nothing which was likely to injure. His own advice would be that the same course should be followed as was customary in the general treatment of tuberculous patients—that is to say, everything possible should be done to raise the patient's resistance. In breast cases there was a certain area under suspicion—namely, the breast itself, the axilla, and the supraclavicular region. That seemed to be "fair game" for fairly wide *x*-ray treatment. He would suspend the tube with a wide open diaphragm two feet above the patient, shielding the face. The dose should be small, the time short—ten to fifteen minutes—and a 3 mm. filter should be used. He thought it would be found that after such treatment the patient would declare from the start that she felt better and stronger. But an attempt ought to be made to do something more than that. Whether what might be called the *x*-ray bath or generalized *x*-ray treatment, as advocated by Dr. Scott, was the best for that purpose was a little open to question. But there was available in sunlight and ultra-violet rays a method of raising the patient's general resistance, and the speaker advocated a plan whereby the treatment of the local area widely by *x* rays was alternated with a course of general sunlight treatment as in tuberculosis.

Dr. J. E. A. LYNHAM said that the improvement following a change in voltage to which Dr. Knox had referred was of great interest. A similar plan had been followed in the treatment of a number of cases of carcinoma which had come under his observation, with good results. Recently one of the surgeons at the Cancer Hospital had been going through the statistics relating to carcinoma of the uterus, and had found that the cases which had shown the best results were those in which radium had been used, followed by *x* rays of penetrating quality, the exposures lasting half an hour twice a week and then spacing out to quarter-hour exposures once in ten days; after an interval in which no exposures were given this spaced-out treatment was resumed for a further period. With regard to generalized radiation, he thought it should be borne in mind that the size of the aperture was of very great importance. If one was going to give radiation on the principle put forward by Dr. Scott the time of dosage should be extremely limited. Recently he had been irradiating inert chemical solutions for the research department. In the first series of radiations the Coolidge tube was kept in the usual lined box, and a small aperture was used; very little change was seen in the solution even when it was placed more or less directly under the tube. Then it was suggested that similar solutions should be irradiated without the tube box so that the whole fan or cone of rays might bear upon the solution, and in that case the changes were profound, although the time of irradiation was the same. If such a change could take place in solutions so irradiated, it seemed that the changes induced in the human body by rays from a relatively wide aperture must be very great indeed.

Dr. DOUGLAS WEBSTER, in replying on the discussion, agreed with Dr. Lynham that if the *x*-ray "bath" over a very large area was given it must be given only for a limited time. He thought that the best results obtained by general treatment with *x* rays were in leukaemia and Hodgkin's disease, but there the conditions were quite different from those obtaining in breast cancer. He failed to see that Dr. Scott had established his case. Professor Russ had stated that a generalized small dose improved the resistance of animals to the implantation of tumours. But the fact remained that generalized small doses did not, so far as the speaker was aware, have any effect upon spontaneous tumours. He suggested that it would assist the position if surgeons would record their breast cases in certain definite groups, according to the condition obtaining at the time of operation. On the general question in debate he was in agreement with Dr. Scott that at present medium-voltage therapy was best for prophylaxis, but he thought Dr. Scott's dual method deficient in several respects, and that in formulating it the pathology of breast cancer had not been fully considered. If one accepted the

view that cancer spread along the lymphatics one must work ahead of clinical signs of the disease, and try to stop it from going any further. The supraclavicular triangle was one great danger zone in breast cancer, and he thought this liable to be neglected under Dr. Scott's method.

Dr. GILBERT SCOTT, also in reply, claimed that by his general or open method he was getting results in cases where he had had no results before—results, for instance, in secondary deposits in the spine. The value of varying the dosage had been mentioned. He wanted to have at his command radiations from the lowest to the highest in quality, and to be able to use filters of different types. On the question of whether a malignant disease was general or local, the practical point for radiologists was that every case, by the time it reached their department, was a general disease. It never reached the radiological department as a localized manifestation.

X-RAY DIAGNOSIS OF DISEASES OF THE COLON.

IN the Subsection of Proctology of the Royal Society of Medicine on May 13th, Mr. F. SWINFORD EDWARDS presiding, a discussion was held on the value of *x* rays in the diagnosis of diseases of the colon.

Dr. GILBERT SCOTT said that this subject was of equal importance to the surgeon and the radiologist. The radiology of the colon had not been developed to anything like the same extent as had the radiology of the stomach, and hence the full diagnostic value of the method had not been recognized. The value depended on correct technique and correct interpretation of what was seen. He regarded the opaque enema[1] as being of as much value in colon cases as the test meal for stomach disorders. In the case of the colon, by the time an opaque meal had reached the lower gut it was so much broken up, and the haustration was so marked, that examination was tedious, and at the end one could not be certain whether or not an organic lesion was present. For colon cases, therefore, he had for some time past discarded the meal and substituted the opaque enema. The gut could be easily manipulated under the screen, and the examination was soon completed without discomfort to the patient. The patient should be carefully prepared, as the presence of faeces might lead to errors in diagnosis. With regard to the interpretation, there were two classes of error: (1) that the lesion might be passed undetected, (2) that inspection of the plate might lead to the diagnosis of a lesion which was not confirmed at operation. The pitfalls included faeces in the colon, air-locks, pressure from without, spasms, and partially filled gut. Most difficulty was caused by small and atypical lesions. To differentiate between tubercle and new growth by the rays was, he considered, practically impossible. He related a number of cases to show the value of the enema method, and showed skiagrams by the epidiascope.

Mr. HAMILTON DRUMMOND said that he had long believed in this method as an aid to diagnosis, but his sanguine views of years ago had been somewhat modified by experience. To estimate the value of *x*-ray findings considerable experience of the pitfalls was necessary. The method should always be combined with abdominal palpation. During the last five years he had been his own radiologist for colon cases. If the surgeon was to derive the full benefit of this means of diagnosis he should either furnish the radiologist with a full history of the case, or, better still, meet him in consultation. Sometimes patients were sent to the radiological department without an ordinary clinical examination properly made. This clinical examination should include the use of the sigmoidoscope. *X*-ray examination of the colon by the barium meal or enema was seldom the prime factor in diagnosis; histories often furnished information of the greatest diagnostic value. Flexures of the colon were particularly difficult points at which to locate a growth, as here the shadows overlapped.

Dr. BERTRAM SHIRES was in agreement with Dr. Scott as to technique, and also with his statement that no examination could be regarded as complete if only one method was used. In the majority of colon cases he felt that an opaque enema was of the greatest value, but there were many traps into which one might fall unless there was close co-operation between surgeon and radiologist. On giving a barium enema there was a filling defect in the pelvic colon in the early stages in 30 per cent. of the cases. The *x* rays often enabled spastic colon to be diagnosed when it could not be recognized by any other means. In one case a great deal of gas in the pelvic colon caused an irregular filling, and this irregularity, on a further filling, completely disappeared. In one case the skiagrams after an enema and the clinical findings also pointed to carcinoma, but abdominal section revealed nothing but slight spasm at the lower end of the descending colon.

Dr. ARTHUR F. HURST's communication is printed in full at page 965.

Dr. ULYSSES WILLIAMS agreed with Dr. Scott about the practical unimportance of the barium meal in these cases. It was quite valueless, he thought, in diseases of the colon, except to show position. The barium enema was useful. It was necessary to be very careful on finding an apparent stricture before determining that it was actually a stricture, for a stricture could readily be simulated. With regard to showing the appendix, it was quite useless to give the ordinary barium meal made with milk or arrowroot. The only satisfactory vehicle was buttermilk, which would fill the appendix in 70 or 80 per cent. of cases. The drawback was that the buttermilk was so very disagreeable that it was difficult to get patients to take it. He started on an investigation on 100 normal people with buttermilk, and after a first experience the volunteers were reduced to 12. His investigation, the results of which he showed in a diagram, proved that, on the basis of the findings in these 100 normal persons, the level of the hepatic flexure in 75 per cent. of cases was just at the crest of the ileum, two or three inches below the position given in the anatomy textbooks, and where the people who believed in colopexy thought it ought to be. His results suggested that variation in the level of the colon alone, without anything else, was of no importance.

Mr. J. P. LOCKHART-MUMMERY said that the fact had to be borne in mind that a great improvement had taken place in the diagnosis of conditions of the colon during the last twelve years. Formerly tumours were diagnosed only when they were large and palpable, or when there was acute obstruction. Surgeons had recognized that unless some marked improvement on that state of affairs was forthcoming there were not likely to be satisfactory results in colon carcinoma. The real problem was to diagnose carcinoma when there was no obstruction and no palpable tumour. A big step had been taken in this direction. Of the various methods available in diagnosis he personally attached more significance to the sigmoidoscope than Dr. Hurst appeared to do. If a patient with growth in the colon were examined with the sigmoidoscope when he had not been prepared in any way, there would be found, in the majority of cases, slight traces of blood up in the sigmoid, and one might be pretty certain that one had to deal with a growth high up in the colon (it was taken for granted, of course, that such a condition as ulcerative colitis was excluded). He thought that *x* rays had helped most markedly in regard to the position of the growth, and that great improvements had still to take place in the diagnosis of position by *x* rays. The radiographic experts at first were rather too enthusiastic about their method, and they made much too elaborate diagnoses from the *x*-ray findings. A more reasonable view was now taken. He thought that negative *x*-ray evidence was useless. It was not possible to declare that there was a normal colon simply because the *x* rays showed nothing abnormal. *X*-ray evidence could only be taken as confirmatory evidence. One method of avoiding error in *x*-ray diagnosis of the colon was by repeated examinations. At least two or three examinations with the barium meal should be made. Perhaps the greatest value of *x* rays was found in diverticulitis; *x* rays furnished a method of distinguishing this from other conditions of the colon, and a proper *x*-ray examination would confirm or exclude diverticulitis.

[1] For Dr. Scott's technique see BRITISH MEDICAL JOURNAL, January 24th, 1925, page 151 ("Radiological examination in organic diseases of the colon: the opaque enema method," by S. Gilbert Scott).

Dr. W. H. COLDWELL said that there were not many who doubted the value of *x* rays, but it was necessary to remind themselves persistently of the failures. One of the reasons why the *x*-ray examination had not yet been made more use of was because it had not been worked out fully. Surgeons and radiologists were both to blame for that—the surgeons for not supplying the material and the radiologists for not making more use of it. Most of the previous speakers had rather condemned the barium meal. Dr. Coldwell thought that there was a great deal to be said for the use of the meal in conjunction with the enema. He described a case which had rather caused him to doubt the efficiency of "wash-outs" previous to the administration of an enema. As illustrating how very careful one must be before coming to definite conclusions from the first *x*-ray appearances, he said that he had often seen apparent filling defects on the screen when the patient was lying on his back, but on turning the patient over into the prone position the defect was obliterated.

Dr. S. C. SHANKS spoke of two "silent areas," one in the sigmoid, where the sigmoid loop might be superimposed upon another loop and so obscure symptoms, the other in the splenic flexure; the barium enema fell to the more dependent portions, and the portion of gut which looped over the ridge formed by the spinal column was not filled by the meal.

Mr. ASLETT BALDWIN related the case of a patient who complained of inconvenience in the left abdomen, with defaecation trouble. Examination with the sigmoidoscope did not reveal blood or mucus. An *x*-ray examination was made, and the report was that there was no filling defect or obstruction. The patient was put upon paraffin. Six weeks later, however, the patient said he felt certain there was something present. The speaker thought he could now feel a lump and distension of the large intestine. Operation disclosed a carcinoma in that position.

Reviews.

THE ANTIQUITY OF MAN.

REMEMBERING the special nature of its subject and the mass of detail only to be understood by minute attention to the text and careful study of the numerous drawings and diagrams and maps it contained, the first edition of *The Antiquity of Man* had a remarkable measure of success. It was published, inopportunely as it might have seemed, in October, 1915, but it had to be reprinted in December, again in February, 1916, and for a third time in March, 1920. Sir ARTHUR KEITH had therefore every encouragement to prepare a second revised edition, and if revised then enlarged, for many new discoveries had been made in the ten years. The new edition,[1] though paged consecutively, has been bound in two volumes, and is therefore easy to read in an armchair—the proper place for the general reader, among whom will be found many members of the medical profession who, though not anthropologists, will find their anatomical knowledge a great help to the understanding of one of the most fascinating stories in the world. Here and there it may be well to skip, but the actual finds are so graphically related, and the conclusions therefrom drawn with so much insidious art, that the book is not easy to put down.

The excellent summaries printed in our columns last week (p. 941) and this week (p. 980) of the course of Munro lectures Sir Arthur Keith has been delivering to the University of Edinburgh give a very good preliminary idea of the material in the book. As in the first edition, the story is unfolded in reverse chronological order. The discoveries of fossil man in South Africa have affected many of the problems the solution of which was, ten years ago, being sought from a study of European specimens; and the descriptions of Boskop man (1913) and Rhodesian man (1921) naturally occupy a great deal of space, and are largely responsible for the increase in the number of pages in the book.

The dictionary maker may define anthropology as the "physiological and psychological science of man," but the complete anthropologist must have knowledge of a good many collateral sciences. First and foremost, he must be well acquainted with anatomy, human and comparative, including odontology; with geography, physical, geological, and human; with geology; and with archaeology, including folklore. Sir Arthur Keith does not fall short in any of these respects, and shows once again how competent he is to handle an immense mass of details and to make them plain, achieving his end, not only through a very clear and well written text, but by the liberal use of diagrams and drawings, which it must have been a very laborious task to produce.

As we read the book its main thesis is now, as in the previous edition, the great and, until recently, unsuspected antiquity of modern man. The geologist and astro-physicist will give all the time the anthropologist wants, but Sir Arthur Keith is now prepared to reduce his demands. Here, however, we come to see more clearly that a great deal depends upon the definition of man. What is meant by man? Logically this ought to have been the first question. But great as may have been the faith of early writers in the doctrine of evolution, it was impossible to foresee the full significance of the need for such a definition until the recent discoveries had been made. Granted that the ancestors of man branched off at some period, remote even in the geological sense, from the main stock which was to yield not only man but the anthropoids, the question is, When in the upward course did the creature develop the qualities which entitle him to be called man? When, as the author says, we speak of the antiquity of man, "most of us have in mind not the date at which the human lineage separated from that of the great anthropoids, but the period at which the brain of man had reached a human level or standard."

Another consideration to which in the new edition more importance is attached is the occurrence of "collateral evolution," a phenomenon known to geologists as the "law of uniform evolution." No one, the author tells us, has had better opportunities of studying this law than Dr. Henry F. Osborne, and this is his statement of it:

> "Some of the most universal laws as to the modes of evolution emerge from the comparative study of the horses, the proboscidians, and the rhinoceroses, from areas so widely separated geographically that there was no possibility of hybridizing or of mingling the strains. For example, during a period, estimated at no less than five hundred thousand years, the horses of France, Switzerland, and North America evolve in these widely separated regions in a closely similar manner and develop closely similar characteristics in approximately a similar length of time. The same is true of the widely separated lines of descendants from the mastodons, elephants, and rhinoceroses."

This again has led to a shifting of opinion and a consequent change in the time table. The idea with which anthropology set out to investigate the genealogy of modern man was that the various types of primitive man succeeded each other in a single-stemmed ancestral tree running up something after the manner of a bamboo to flower in the chief races of modern man. It is now seen, or at any rate the progress of investigation has now made it highly probable, that the process of evolution should be compared with, say, the elm, and that of many branches some have lost their vitality and dropped off. This fate, it is thought, befell Neanderthal (Mousterian) man and also Rhodesian man. The process of extinction may have taken many thousand years, probably hundreds if not thousands of generations, for there is reason to think that for a very long period Neanderthal man dominated, if he did not overrun, Europe. The long struggle between the two types or varieties makes an appeal to the imagination. Mr. Kipling has touched the fringe of it. The victory must have gone to the better but not, it would seem, to the larger brain.

A CLINICAL HANDBOOK ON DISEASES OF CHILDREN.

DR. R. HUTCHISON'S *Lectures on Diseases of Children* has now reached its fifth edition.[2] With successive revisions and additions it has become a larger volume, and now, indeed,

[1] *The Antiquity of Man.* By Sir Arthur Keith, M.D., D.Sc., LL.D., F.R.C.S., F.R.S. In two volumes. New and enlarged edition, completely revised and reset. London: Williams and Norgate, Ltd. 1925. (Med. 8vo: Vol. I, pp. xxxii + 376, 133 figures; Vol. II, pp. xiv + 377, 266 figures. 25s. the two volumes.)

[2] *Lectures on Diseases of Children.* By Robert Hutchison, M.D., F.R.C.P. Fifth edition, revised and enlarged. London: E. Arnold and Co. 1925. (Demy 8vo, pp. xii + 459; 87 figures. 21s. net.)

gives a fairly complete presentation of the subject; but it retains its original character and presents the subject, not in the form of a systematic treatise, but as a set of class-room lectures. It was, indeed, as a course of lectures that the book came into being; and not only is its title genuine, but the text also bears unmistakable evidence of the language and atmosphere of the classroom. In the present edition six lectures have been added; among the subjects discussed in them are acute rheumatic carditis, convulsions in childhood, "the solitary child," and the diagnostic significance of abdominal pain in childhood. The book now consists of thirty-six lectures, and their subjects include all the important and common conditions of illness in children met with in practice. But the author never loses sight of his original aim of giving to students, already oppressed by a heavy curriculum of study, a clear, practical, and adequate account of the important diseases of early life. Indeed, the word "author" is a misnomer; for it is as a teacher, with his students gathered round him, that he appears in the book: emphasizing what is salient or significant, constructing a diagnosis, and specifying remedies. While he is always clear both in thought and language, and dogmatic also, as every good teacher should be, he is not afraid to say that here the matter is doubtful, or, again, that he does not know. This last is indeed one of the high and uncommon merits of a teacher that in drawing out the map of knowledge for his pupils he scrupulously traces the boundaries where knowledge ends and the unknown begins. When that is done by a teacher with undoubted claims to knowledge and experience, the student not only gets a surer grasp of ascertained facts, but his critical faculty is trained and he may also receive an impulse to himself explore and investigate the territory of the unknown.

These discourses of a teacher are beyond doubt adapted to the needs of students of the subject; but they will also appeal to the practitioner, for their material is drawn directly from the bedside, and points of special importance are illustrated by the citation of case-records and by photographs and diagrams.

Further, the book is of interest to those who, like the author, are engaged in teaching this subject. For it is an actual model of a course of teaching in diseases of children. That subject has only in recent years obtained a separate place in the medical curriculum; and it has not yet gained the status of an examination subject. Until this last step is taken the programme and scope of its teaching can hardly be standardized. But in the meantime Dr. Hutchison has furnished in his admirable book a syllabus of contents, and a plan of teaching, which will assist in the determination of how much of diseases of children should be taught to the student of medicine, and in what way the subject should be presented.

THE MICROSCOPY OF THE LIVING EYE.

ALTHOUGH the microscopy of the living eye has been practised in this country by a few ophthalmologists for some years, and although it has been the subject of a number of papers, some of which, including several by Mr. Harrison Butler and Mr. Basil Graves, were published in our columns during the last year, the only textbooks hitherto available have been in German, and Vogt's atlas, though excellent, is a large work written in a rather difficult style. We welcome, therefore, KOBY'S *Microscopie de l'Oeil vivant*,[3] written by a pupil of Vogt for the beginner, which is smaller, more simple, and (may we confess it?) less concerned with forbidding mathematics.

The book begins with three chapters of an introductory nature. In the first, the corneal microscope and slit-lamp are described, and the exposition of their principles certainly does not err in being too technical. In the second, the methods of examination are given in detail, and so clearly that the novice may understand. In the third, we consider the phenomena of the reflection of light from the ocular surfaces and media—a frequent source of error on which the author lays special stress. The remainder of the book deals seriatim with the various structures to which the slit-lamp affords access; separate chapters are devoted to the conjunctiva, the cornea, the anterior chamber, the iris, the lens, and the vitreous: of special interest are the remarks on corneal pigmentation and thermal currents in the aqueous. Each section is arranged systematically under six heads: the special technique appropriate to the organ under consideration, the normal aspect, congenital abnormalities, senile characteristics, traumata, and pathological lesions—an arrangement which has the advantage of simplicity and ease, but which, like all schemata, on occasion leads the author into difficulties. Throughout especial stress is rightly laid upon those physiological variations from normal which may be mistaken for pathological lesions, and upon the early departures from normal rather than on the appearances of advanced disease. The monograph ends with a very complete bibliography.

The author has maintained throughout a nice balance between enthusiasm and restraint, and points whereon as yet opinions differ are treated with commendable sanity. The method is still in its infancy, and the interpretation of the appearances seen is not always easy and is to a large extent a personal factor; Koby will be found a careful and unprejudiced observer. The book is the best, in fact the only one of its kind, and to those who can read French, and have access to one of Gullstrand's instruments, will be found a safe and pleasant guide in a fascinating voyage of discovery.

[3] *Microscopie de l'Oeil vivant.* Par F. Ed. Koby, Bâle. Paris: Masson et Cie. 1924. (Med. 8vo, pp 240; 43 figures. Fr. 25.)

A FRENCH SYSTEM OF MEDICINE.

THE twenty-two volumes of the French encyclopaedia entitled *Nouveau Traité de Médecine* are appearing at fairly regular intervals. The system is planned to cover the whole field of medical science, though practical medicine and pathology come in for most attention.

We have drawn attention to earlier volumes as they have appeared, and we now have to deal with three others that have appeared recently.[4] Volume XI is on the pathology of the respiratory system, and seven authors have contributed to it. It opens with an introductory essay on the symptoms of respiratory disease, and this is followed by essays on the pathology of the nose and larynx, diseases of the trachea and bronchi, asthma, bronchopneumonia, congestion, oedema, abscess, and gangrene of the lung, pneumonia, pulmonary embolism, emphysema, syphilis, fibrosis, pneumonokoniosis, atelexis, cancer, and hydatid cysts of the lung.

Volume XIV is devoted to the digestive system, and to it also seven authors have contributed. The subject of intestinal diseases is not handled very systematically, but each particular theme, about which an expert writes, is dealt with exhaustively. These are the successive sections of the book: intestinal pathology, gastro-intestinal diseases of infants, intestinal worms, ankylostomiasis, analysis of faeces, and pathology of the rectum and colon.

Volume XXII deals with diseases of muscles, bones, and joints. It contains eight chapters on the following subjects: diseases of muscles, acquired diseases of bones, congenital lesions of bones, rickets, osteomalacia, achondroplasia, infectious and toxic pseudo-rheumatism, and finally chronic rheumatism.

This series of well illustrated books has been published under the direction of Professors G. H. ROGER, F. WIDAL, and P. J. TEISSIER.

[4] *Nouveau Traité de Médecine.* Publié sous la direction de MM. les Profs. G. H. Roger, F. Widal, P. J. Teissier. Paris: Masson et Cie. Fascicule XI: Pathologie de l'Appareil respiratoire (Roy. 8vo, pp. 636; illustrated. Fr. 45). Fascicule XIV: Appareil Digestif (Pp. 578; 166 figures, 7 plates. Fr. 45). Fascicule XXII: Muscles, Os et Articulations (Pp. 560; 209 figures, 2 plates Fr. 45).

"BRAIN."

THE new number of *Brain*[5] (the first part of the forty-eighth volume) follows close on the heels of the last part of the forty-seventh volume. The first paper in the new number is on the lipoids in neuronic degeneration and in amaurotic family idiocy, by Dr. E. Weston Hurst. It comes from the pathological laboratory of the National Hospital for the Paralysed and Epileptic, and is the result

[5] Published in London by Macmillan and Co., and in New York by the Macmillan Company. Yearly subscription in this country 24s., to be sent to Messrs. Macmillan, St. Martin's Street, London, W.C.2.

of work conducted during the tenure of the Walter Olyer's travelling studentship of the University of Birmingham. Dr. Hurst has investigated the fatty substances found in the nervous tissues in disease by a series of staining methods, and concludes that the duration of the disease is a main factor in determining the type of lipoid present. He noted that, in the breakdown of myelin, phosphatides, cerebrosides, fatty acid, and neutral fat are found successively according to the duration of the degeneration. He then studied the lipoids in amaurotic idiocy, cerebromacular degeneration, and in the senile nerve cell. He considers that the degeneration is essentially of the same nature in all these conditions, and that the differences that exist depend on the acuteness or chronicity of the process. The next paper, by Mr. Howard Florey, John Lucas Walker student, is founded on microscopical observations on the circulation of the blood in the cerebral cortex, made in the Physiological Laboratory, Oxford, and the Pathological Laboratory, Cambridge. By means of a Spencer dissecting microscope with illumination from a 100-candle power Pointolite lamp, direct observations with an average magnification of 50 diameters were made on the cerebral cortex in cats and rabbits; in other experiments the anterior surface of the medulla and the floor of the fourth ventricle were similarly observed. The cerebral arteries were found to react by contraction or dilatation to mechanical, thermal, electrical, and chemical stimuli, but no contraction was obtained by the local application of adrenaline, thus confirming the suspected absence of vasomotor control of the cerebral vessels. The early stages of inflammation of the meninges were observed, and showed no essential difference from inflammation in other parts of the body.

In an interesting article on astereognosis Professor G. Campora of Geneva discusses the nature of this symptom in central and peripheral lesions of the nervous system. He finds that true astereognosis is invariably associated with deficiency of tactile discrimination as revealed by Weber's compass, and considers that such deficiency is the essential factor. Defect in the sense of position is also always present, but he believes that it is not an essential element, since this sense may be markedly defective without astereognosis occurring.

The many respiratory disturbances seen in the early, and especially the late, stages of epidemic encephalitis are classified by Dr. W. Aldren Turner and Dr. Macdonald Critchley into disorders of rate, disorders of rhythm, and respiratory tics. They put forward the view that a disturbance of cortical centres concerned in the control of respiration is a more probable explanation than the presence of lesions of respiratory centres in the medulla or basal ganglia.

Dr. W. Russell Brain contributes a clinical study of increased intracranial pressure in sixty cases of cerebral tumour, with special reference to the time of onset of the three principal symptoms—headache, vomiting, and papilloedema. Vomiting, he considers, is always a symptom of hydrocephalus, and is therefore earliest in tumours which cause obstruction of the aqueduct of Sylvius—that is, in most subtentorial tumours. In such tumours papilloedema is also the result of hydrocephalus, but is found to occur later than vomiting; in supratentorial tumours papilloedema is more likely to be due to a local rise of pressure without hydrocephalus, and therefore precedes vomiting.

NOTES ON BOOKS.

A MUCH felt want has recently been met by the Association of Infant Welfare and Maternity Centres, which has published a *Mothers' Cookery Book*.[6] It is a pamphlet of 48 pages with an index, informing mothers how to prepare simple, cheap, and tasty meals. Most cookery books present an embarrassing array of expensive recipes and are prone to consider that a milk pudding added to the daily menu sufficiently provides for the needs of growing children. This pamphlet gives recipes of dishes which can be enjoyed by the entire family and consumed by the toddler with safety and advantage. The 150 recipes are grouped under the following headings: soups, fish, meat dishes, vegetables and vegetarian dishes, egg dishes, puddings, cakes, drinks, and jellies. Placed before each group is an explanatory note indicating the recipes suitable for children under 18 months and emphasizing the foods which contain vitamins. The simple recipes for cooking vegetables are especially good. The book is specially designed for the use of mothers attending welfare centres, but all mothers who take an interest in the most suitable diet for their children could not do better than expend fourpence on it. The Association of Infant Welfare and Maternity Centres has made an effort to translate the scientific findings of modern research in dietetics into language which can be understood and recipes which can be carried out by all. The association may be congratulated upon having achieved such a result.

The 1925 edition of the *Yearbook of the Universities of the Empire*[7] has been increased by some fifty pages; it presents the same arrangement which has made it so valuable a book of reference since its first publication in 1914. Numerous details about the universities of the world are set out so systematically and indexed so carefully that any point of practical importance can be ascertained without difficulty. In the 1924 edition the appendixes devoted to universities outside the Empire included twenty-one different countries; to the 1925 edition eight new countries have been added—namely, Greece, with its University at Athens and a projected one at Salonika; Egypt, Esthonia, Portugal, Japan, Lithuania, Turkey, and Latin America. This is good evidence that the disabilities inflicted on educational studies during the war are now being removed rapidly in an increasing number of countries. The volume comprises a directory of the staffs of the universities of the Empire, an account of the equipment in libraries, museums, and laboratories, under the heading of "general information," and annual reports of the past academic year. The help given by the official registrars and other university correspondents ensures that the information is accurate and recent.

The Constituents of Coal Tar,[8] by P. E. SPIELMANN, is one of the series of monographs on industrial chemistry produced under the editorial direction of the late Sir Edward Thorpe; several volumes of this series have already been noticed in our pages, and that now before us is intended to show what kind of things are found in coal tar and what they are like. Any chemist could have named the substances and summarized their properties, but what the author has done is something better. With excellent discrimination he has omitted what was not needed to give his substances individuality; what was needed he has used so well that the materials take character under his description. It is always pleasing to a reader to be made to feel that the author has estimated exactly what he knows already and what other information would interest him most. Speaking for ourselves we find this done with great nicety. We were astonished to find that there was so much of interest to be learnt, and not generally known, about the constituents of coal tar. As in other volumes of this valuable series, there are ample bibliographical references and a good index.

The *Transactions of the American Proctologic Society*, 1923,[9] contains eleven articles on diseases of the rectum and anus; it is a report of the papers presented to this society at the twenty-fourth annual session held at Los Angeles, California. It will be remembered that a large number of the members of this society travelled last year to this country and held their annual gathering in London. They were welcomed by the Proctological Section of the Royal Society of Medicine, and London surgeons had the opportunity of making the acquaintance of some of the proctologists who had contributed to the volume we have before us. The discussions which took place at these united gatherings revealed that in many rectal conditions American practice differs from our own. To those London surgeons who were present at these meetings an added interest will be given to the contents of this volume because of recent friendship with some of the authors.

[6] *The Mothers' Cookery Book*. Compiled by the Association of Infant Welfare and Maternity Centres. London: The National League for Health, Maternity, and Child Welfare. 1925. (Demy 8vo, pp. 48. 4d. post free.)

[7] *The Yearbook of the Universities of the Empire, 1925*. Edited by W. H. Dawson, and published for the Universities Bureau of the British Empire. London: G. Bell and Sons, Ltd. 1925. (Crown 8vo, pp. xii + 808. 7s. 6d. net.)

[8] *The Constituents of Coal Tar*. By Percy Edwin Spielmann, Ph.D.Bâle, B.Sc Lond., F.I.C., A.Inst.P., A.R.C.Sc. Monographs on Industrial Chemistry. London and New York: Longmans, Green and Co. 1924. (Demy 8vo, pp. xii + 219. 12s. 6d. net.)

[9] *Transactions of the American Proctologic Society*. Twenty-fourth Annual Session, 1923. New York: P. B. Hoeber, Inc. 1924. (Med. 8vo, pp. xii + 89: illustrated. 3 dollars net.)

THE LISTER INSTITUTE.

THE annual general meeting of the members of the Lister Institute was held at the Institute on the afternoon of Wednesday, May 20th. It was preceded by a meeting of the council, at which the resignation of Sir Frederick Andrewes as the representative of the council upon the Governing Body, owing to increasing demands upon his time and energy, was accepted with regret, and Dr. A. E. Boycott, professor of pathology at University College, was elected in his place. At the general meeting the chairman, Sir David Bruce, made an appropriate reference to the loss the Institute had suffered by the death of Professor E. Klein, who had been a member since the amalgamation of the Institute with the College of State Medicine in 1893; of Dr. Horace T. Brown, who had been for a time a member of the council; and of the Marquess Curzon of Kedleston. The council recorded its sorrow at the death of Sir Rickman Godlee, who formerly represented the Royal College of Surgeons of England, and latterly members of the Institute, upon the council; his relationship to Lord Lister gave to his connexion with it a more intimate character than that implied merely by membership of the council. To the vacancy thus caused Professor Starling, who, though a member of the Governing Body, had not previously been a member of the council, was unanimously elected.

ANNUAL REPORT.

This report of the Governing Body, which is signed by Professor E. H. Starling, acting chairman, gives a good general idea of the multifarious activities of the several departments of the Institute, which, under the general direction of Professor C. J. Martin, have accomplished an enormous amount of work during the year under review.

Vitamins.

At the present time special interest attaches to the Department of Biochemistry, of which Professor A. Harden is the director, because it is concerned, among other things, with the investigation of vitamins and matters relating thereto. In this department Miss E. H. Hume and Miss H. H. Smith have continued their researches on the influence of ultra-violet radiations on the growth and calcification of bone in rats maintained on deficient diets. Miss Hume has confirmed Steenbock's observation at the Wisconsin Agricultural Station, that lard and olive oil, which are usually devoid of fat-soluble vitamins, acquire the property of promoting growth and calcification after exposure, in a thin layer, to ultra-violet light. The report points out that the discovery permits a rational interpretation of the hitherto mysterious power of light to complement a qualitative deficiency in food supply. This subject is dealt with at some length in the paper by Webster and Hill published elsewhere in this issue (p. 956), and the general conclusion of the Lister report is that "as light of high refrangibility activates, by photodynamic action, some constituent of a crude fat which is otherwise inert, it is not unreasonable to suppose that activation can take place, either before the fat is eaten, or whilst it is circulating in the superficial capillaries of skin which are exposed to sunlight." Miss Harriette Chick, D.Sc., the principal assistant in the Department of Experimental Pathology, over which the Director of the Institute, Professor C. J. Martin, presides, has been studying the amount of vitamin A and antirachitic vitamin in green leaves. She is seeking to ascertain to what extent plants are dependent on sunlight for the manufacture of these two vitamins respectively. Dr. Zilva and Miss Soames are studying the relative growth-promoting antirachitic potency of butter from pasture-fed and from stall-fed cows when their diet is supplemented with green food, ensilage, and cod-liver oil respectively. This inquiry is being carried out at the National Institute for Research in Dairying at Reading. The active principle of cod-liver oil resides in the non-saponifiable fraction. Professor Drummond at University College has endeavoured to effect a further purification of the antirachitic vitamin. After removal of the soaps, the bulk of the cholesterols is separated and the residue fractionated by distillation *in vacuo*. Miss Soames has conducted the biological assay of the different fractions.

Tissue-Culture in the Investigation of Cancer.

Dr. T. Lumsden has been occupied in investigations concerning the growth of tissues *in vitro*. The use of serum considerably simplifies the method of tissue culture and renders it more readily available for the study of various morphological and bacteriological problems. The experience of previous workers that serum has an inhibitory effect on the growth of tissues *in vitro* has been shown by Dr. Lumsden to be due to allowing the serum to become too alkaline owing to the loss of carbon dioxide by exposure to the air. If this loss be prevented, or compensated by exposing the serum to expired air, both normal tissues and tumour cells can be cultivated in pure serum. By the use of this method he has found that by repeatedly inoculating the cancer of mice or rats into animals of another species, antibodies more or less specific to the cancer cells can be produced. An antiserum prepared in this way has been used as a medium for the cultivation of normal tissues and the homologous cancer cells. In it the normal tissue cells survive and grow for many days, while fragments of the cancer with which the antiserum was produced, placed alongside them in the same culture cell, are rapidly killed. This discovery is being utilized to ascertain whether an antiserum prepared in this way will modify the growth of its homologous tumour in the living animal.

Inflammation and Nutrition.

In the Department of Bacteriology, directed by Professor J. C. G. Ledingham, Dr. Arkwright, in continuance of his work with Dr. Zilva, has demonstrated the great difference between the inflammatory reaction produced by irritants, according to whether the animal is well or ill nourished. This difference is most obvious in the case of young growing animals.

Foot-and-Mouth Disease.

Dr. Arkwright has also given a good deal of time to supervising the investigation of foot-and-mouth disease which is being carried out at the Institute for the committee appointed by the Ministry of Agriculture. The chairman of this committee is Sir William Leishman, and among its members are Professor Bulloch (a member of the Governing Body of the Institute), Professor C. J. Martin, and Dr. Arkwright. One of the laboratories, together with a suitable isolation and self-contained animal house, has been placed at the disposal of the committee. The work is under the immediate direction of Dr. Bedson, who has the help of Dr. Maitland, formerly acting professor of pathology in the University of Toronto, and Mrs. Burbury.

Scarlet Fever.

In the Department for the Study and Preparation of Antitoxic Sera attention has been given to recent work in America, suggesting that streptococci present in the throats of scarlet fever patients may be primarily responsible for the disease. Our readers have been kept acquainted with the course of these investigations, conducted largely by G. F. and G. H. Dick. At the Field Department of the Institute, at Elstree, scarlet fever toxin has been prepared, from American strains supplied by Dr. Dochez, for the immunization of horses. The serum of these horses is now being tested therapeutically. That it contains specific neutralizing substances is shown by the fact that it causes blanching of the rash in a certain proportion of scarlet fever cases; also, when introduced in small doses prophylactically in contacts incubating the disease, the rash, when it appears, avoids the skin areas under which the serum has been inoculated. The quantity of serum injected in these experiments was only 2 c.cm., an amount evidently insufficient to produce general prophylaxis. The subject is being further investigated as opportunity offers, and the Biological Standards Committee of the Medical Research Council is arranging for tests with a view to establishing some reliable method of standardizing the serum and toxin. Material for this purpose is being provided by the Serum Department.

We have mentioned only a few of the inquiries in progress, but have said enough to show the great activity displayed by the workers in all departments of the Institute.

British Medical Journal.

SATURDAY, MAY 23RD, 1925.

LESSONS OF THE HARNETT CASE.

WE publish verbatim, at page 990 of this issue, the judgements delivered in the House of Lords on May 15th in the appeal of Mr. William Smart Harnett. The fact that the unanimous decision of the Lord Justices in the Court of Appeal in favour of Dr. Adam and Dr. Bond has been unanimously upheld by the Law Lords, and that the grave reflections cast upon both Dr. Adam and Dr. Bond by the answers of the jury to questions put to them by Mr. Justice Lush have been shown by the members of both appeal courts to be entirely lacking of foundation in fact, are matters that afford complete satisfaction to the medical profession, since the characters of two of its members, one of whom holds a highly responsible position in the administration of our lunacy laws, are now vindicated beyond cavil.

The facts of the case are set forth in detail in the judgement of the Lord Chancellor. Here we merely wish to refer to certain main issues arising out of the tortuous maze of evidence given in the course of the fifteen days over which the hearing in the King's Bench Division dragged, bearing in mind that all this evidence was given eleven years after the facts occurred, and, human memory being what it is, was somewhat hazy in character.

It was not disputed that on November 10th, 1912, when the original reception order was made, Mr. Harnett was of unsound mind; but Mr. Harnett's condition improved to the extent that, on December 12th, 1912, he was allowed to go home for twenty-eight days on a leave of absence on trial order, made under Section 55 (3) of the Lunacy Act, 1890—in a form settled by the law officers of the Crown—which stipulated that the medical officer should at any time before the expiration of twenty-eight days have power to take back the said patient into the licensed house "if his mental condition requires it." Mr. Harnett left the mental home at Malling Place with his brother, but on the morning of December 14th he called at the offices of the Commissioners in Lunacy in Victoria Street, London, apparently for the purpose of asking that he be put in the care of the police and not of his brother. What happened at the offices is not quite clear from the evidence, but the Law Lords accepted the facts that both the secretary, Mr. Dickinson, and Dr. Bond thought Mr. Harnett was in an excited state and unfit to be at large, and that, after identifying Mr. Harnett's case in the files, they telephoned to Dr. Adam their opinion. Upon this, Dr. Adam sent a car and fetched Mr. Harnett back to Malling Place, where he examined him, and, finding him worse mentally than when he was released on trial, detained him under the original reception order. Mr. Harnett stayed at Malling Place until February 22nd, 1913, and thereafter he was confined at different asylums until October 15th, 1921, when he escaped. Owing to the anomalous Section 85 of the Lunacy Act, 1890, which says that an escaped lunatic can only be retaken within fourteen days of escape without a fresh order or certificate, Mr. Harnett, by eluding recapture for that period, regained his liberty and was declared sane by eminent alienists whom he consulted.

The action against the two doctors was not founded in negligence, as was the case in Everett *v.* Griffiths and Anklesaria (1920, 3 K.B. 163; 1921, 1 A.C. 631), but in conspiracy and false imprisonment. The allegation of conspiracy was dropped early in the course of the proceedings, and was clearly negatived by the jury by their answers to questions 13 and 14. There remained the allegation of false imprisonment, and the jury, by their answer to question 17, found that Dr. Adam was not responsible for the false imprisonment. It was admitted all along by counsel for Dr. Bond that Dr. Bond was responsible for the detention in the Commissioners' offices on December 14th, 1912, and his liability in damages for this act followed from the jury's finding that Mr. Harnett was sane on that date. It was not open to Dr. Bond *qua* Commissioner to plead the protection afforded by Section 330. This is now the only point left open: a new trial has been ordered for a jury to determine these damages for a period of detention which, the Lord Chancellor said, in a just view could not extend beyond 7 o'clock of December 14th.

The Lord Chancellor characterized it as a remarkable fact that no direct question was put to the jury either as to the alleged conspiracy or as to the alleged false imprisonment. Dr. Adam not being found liable for false imprisonment, there was no further ground of action against him on the statement of claim, and the question of negligence arose out of his defensive plea of Section 330—open to those who act *bona fide* and with reasonable care in pursuance of the Lunacy Acts. The *bona fides* of Dr. Adam was clearly established by the jury's answer to question 13, but in their answer to question 15 they said that he did not take reasonable care in exercising his power to retake Mr. Harnett (under the leave of absence order). Mr. Harnett's counsel throughout advanced the amazing contention that the medical officer had no power of recapture outside the mental home, and that a recertification was needed before Mr. Harnett could be brought back unless "his mental condition requires it." As the jury had found that Mr. Harnett was sane on December 12th, it followed from this argument that Dr. Adam had not, in fact, exercised that reasonable care which afforded him the protection of Section 330. The Lord Chancellor scotched this argument. Such a provision as "if his mental condition requires it" could not, in his view, mean that the medical officer was to take back the patient at the risk of having it found by inquiry many years after that the patient's mental condition was consistent with his remaining at large. The medical officer was the judge of the patient's mental condition, and in him the power to retake the patient rested, and that power was capable of being exercised wherever the patient might be found. The argument that the onus was upon Dr. Adam to prove that he had exercised reasonable care was also described by the Lord Chancellor as fallacious. If such a power was exercised negligently the remedy (if any) would, of course, be by an action for negligence and not for false imprisonment, but the Law Lords agreed with the Court of Appeal that there was no evidence to substantiate the jury's answer to question 15 that Dr. Adam had not taken reasonable care. The case against Dr. Adam was thus shown to be built on the flimsiest of foundations—inferences of fact and law which three Lord Justices and five Law Lords have unanimously agreed ought never to have been drawn. Further, the Law Lords disapproved of the form of some of the questions put to the jury, particularly questions 7, 8, and 9, to which the jury answered that Dr. Bond did not honestly believe that the plaintiff was of unsound

mind, or that he was fit to be at large, or was dangerous to himself or others. The Lord Chancellor pointed out that it was common ground that the effect of the jury's answer to question 10 was that Dr. Bond's belief that the plaintiff had escaped from his brother's charge was the reason for his having Mr. Harnett sent back. But we agree with Lord Buckmaster that this explanation of the earlier answers of the jury is inadequate. Even assuming that Dr. Bond may have made a mistake—and from certain observations which Lord Buckmaster made in the course of the hearing in the House of Lords we infer that he, at any rate, did not think Dr. Bond had made any mistake at all—he could find nothing in the evidence that on any interpretation of the word could cast the least reflection on his honesty: "I think it is to be regretted that a question should have been left to the jury in such a form that the verdict taken upon it must, in the plain meaning of the words, cast a reflection upon Dr. Bond's character which no sophistry can explain away."

The most disturbing aspect of the Harnett case to the medical profession was that of the doctrine enunciated by Mr. Justice Lush—the doctrine of continuing responsibility. Heavy damages were the fruits of the direction of Mr. Justice Lush to the jury: "taking into consideration the whole purpose for which he was so detained." The Lord Chancellor said the findings on damages were "obviously coloured" by such and similar directions. We have, in discussing the case a year ago, described as amazing the dictum of Mr. Justice Lush that once a man is certified insane each subsequent certification by a doctor and each adverse report by a visitor is a mere formality, a mere act of omission to find the patient sane, and not a new act intervening to break the chain of causation. The Lord Justices, fortunately for the medical profession, took a different view of the law, and held that this chain had been broken at "innumerable points." It appeared to the Lord Chancellor to be impossible to hold that the detention of the appellant at the offices for a few hours was the direct cause, not only of Mr. Harnett's being retaken and conveyed to Malling Place, but also of his being confined in that and other mental homes until October, 1921. Dr. Bond could not, he said, on any intelligible principle, be held to be responsible for the consequences of those events; Lord Dunedin looked upon such a suggestion as preposterous.

Medical men are now free from the fear they quite legitimately entertained after the judgement of Mr. Justice Lush: that when they certify a patient it is possible that a jury, sitting some years hence, may find that selfsame patient to have been sane on the date of the original certification, and that the doctor responsible for such certification may be made liable in damages for the whole period of detention, in spite of the many subsequent independent certifications by other medical men during that period.

But we do realize, with the Lord Chancellor, that the verdict of the jury and the heavy damages they gave against Dr. Adam and Dr. Bond were the outcome of a belief that Mr. Harnett was quite sane during the whole period from 1912 to 1921, though there was no actual finding that Mr. Harnett was sane after December 12th, 1912. This fact, as the Lord Chancellor said, gives rise to anxiety, though we agree with him that even if Mr. Harnett was sane during his confinement it was no reason for visiting vindictive penalties upon persons who acted in good faith and who were not responsible for any defect in the law.

The Lord Chancellor enumerated the existing safeguards, and said it might be—"I do not say that it is"—the fact that all these precautions are insufficient, and that the lunacy laws require to be further strengthened in the interests of the persons whom they may affect. The proceedings in the Harnett case in the King's Bench Division were the direct cause of the holding by a Royal Commission of the inquiry into the administration of our lunacy laws, and we look forward with interest to the publication of its findings. While we have always insisted that the public at large must be protected against the dangers to which it would be exposed if lunatics were allowed to move about unrestrained, we have always placed as much, if not more, emphasis upon the protection of the individual against improper confinement. We have on several occasions urged that the hard-and-fast legal procedure in England should, in the interest of the patient, be approximated more nearly to the Scottish methods, as in their early stages many forms of mental disorder are curable by suitable treatment, for which statutory provision should be made.

Whatever new legislation may be the outcome of the Royal Commission, the members of the medical profession will continue loyally to administer the lunacy laws, and to discharge those large responsibilities which have been placed upon them on the theory that they can be trusted; and, now that the final decision in the Harnett case has shown that Section 330 is a sure shield to all medical men who act *bona fide* and with reasonable care in pursuance of the lunacy laws, they will feel, while performing their tasks, a sense of security which would have been grievously lacking if the judgement of Mr. Justice Lush had been allowed to stand.

THE SPREAD OF SMALL-POX.

AN incidental effect of the renewed prevalence of small-pox since its minimum in 1917 is the resumption of the outpouring of letters to the press by opponents of vaccination whose knowledge of the subject is in inverse ratio to the assurance they display in dealing with it. So long as variola retains the mild form which is now presented in most countries—a form which Jenner described as occurring epidemically in 1789—it may be thought hardly worth while to pay any attention to the influence of such commentators. Fortunately the children who are being attacked by small-pox, owing to their parents' neglect to have them vaccinated, are being vicariously punished much more lightly than they would have been in the nineteenth century, and while that remains the case there is temptation to treat the silly dialectics of the letter-writers with silent contempt. But there is probably some risk of sober-minded people misunderstanding the silence, and from that point of view we shall call attention to some statistics which Dr. C. C. Pearce, senior surgeon to the United States Public Health Service, Chicago, has published in a recent issue of the *Boston Medical and Surgical Journal* (April 9th, 1925).

Dr. Pearce's data are based on the records of the United States Public Health Service relating to all quarters of the globe. Small-pox, he observes, remains the most widely distributed plague in the world, there being practically no country permanently free from it. During the year ending June 30th, 1924, 149,550 cases of small-pox with 22,346 deaths were reported by health officers throughout the world to the United States Public Health Service. One-fifth of all these cases occurred in the United States, forty-

five States reporting a total of 30,771 cases. Apart from China and India, during 1923 only three countries in the world where vital statistics are kept and are available exceeded the United States in their small-pox rate. These countries were Switzerland, Russia, and Greece, which had rates respectively of 55, 43, and 33, as compared with 27.1 per 100,000 in the United States. On the other hand, in South Africa, Egypt, Algeria, Finland, Hungary, and the Baltic republics the small-pox rate ranged from 3.9 to 0.35 per 100,000, while the Scandinavian countries, Australia, and New Zealand reported no cases at all. During 1924 3,073 cases occurred in Minnesota with 306 deaths—a mortality of 9.9 per cent. Of the 306 fatal cases none had been successfully vaccinated within seven years, and 243 had never been vaccinated. Forty-seven had been vaccinated, but the successful vaccinations ranged from eight to seventy-five years before the fatal attack, and in 16 there was no definite history of vaccination. In an outbreak at Windsor, Ontario,[1] there were 67 cases and 32 deaths between December 12th, 1923, and March 17th, 1924. Within two weeks over 50,000 persons were vaccinated, and the epidemic promptly subsided. The outstanding features of the epidemic were that all the deaths occurred in unvaccinated persons; that seven out of every ten unvaccinated persons who contracted the disease died, the fatality among the unvaccinated being 71 per cent.; one man, aged 80, who had been vaccinated sixty years before, and who lived in the same house as a man with malignant small-pox, developed a mild attack from which he quickly recovered. The rapid increase that may occur in the virulence of a small-pox epidemic is shown by the experience of Detroit. Between September 1st, 1923, and March 15th, 1924, 710 cases occurred with only 4 deaths. On the other hand, during the period March 16th to June 1st, Detroit had 795 cases with 105 deaths. Exclusive of the cost of the patient's treatment in hospital, which amounted to $2.39 a day for each patient, the epidemic cost the Health Department of Detroit $127,854, and it was calculated that the time lost on account of 784 persons who had small-pox between April 13th and August 31st, 1924, was 163 years, 8 months, and 17 days.

A telegram from the *Times* correspondent in New York, dated May 17th, states that that city has voted $80,000 (£16,000) for a special campaign by the Health Department to prevent the spread of small-pox. There were, he said, "only six cases in the city at that time, but the prevalence of the disease in Philadelphia, Camden, and some neighbouring suburbs has led the health commissioner of New York to emphasize the need for precaution, especially as most of the cases reported throughout the country in recent weeks have been of a virulent type, with a large percentage of deaths."

While this is the position in America the infection continues to spread in England. In the first four months of this year the total number of cases reported has been 2,393. According to the record in the Registrar-General's reports, the weekly numbers, from January 3rd to May 2nd, which began with 91, have mounted gradually to 176 in the seventeenth week, the highest figure so far reached. In the eighteenth week 162 cases were notified. The North of England and the Midlands have been mainly affected, Northumberland, Yorkshire, Derbyshire, Notts, and Northampton all being involved.

The health officers of the great cities of the industrial region cannot but be in continual anxiety, especially if the disease prevails in rural or urban districts near them. The fact that they have hitherto been largely successful in keeping the disease at bay is most creditable, and their continued success will be watched with keen interest. The cost to the public funds is mentioned by Dr. Pearce in respect of America, and is receiving attention in places affected in this country. There have even been mutterings of abandonment of hospital isolation, and resort to such segregation as might be possible at home. That is a counsel of despair to which the public health service of this country is unlikely to listen. It is quite true, however, that the task of the medical officer of health is now made extraordinarily difficult. He has to contend with concealments of recognized cases, with failures to recognize the disease, and with much neglect of vaccination even in some localities where small-pox has been prevalent. He struggles to discover contacts, but in the circumstances there is great risk of lists being incomplete, and he may well feel the task almost hopeless. Where the infection has already taken firm hold of a community the only course is to continue trying to wear down the enemy by steady perseverance in vaccination, isolation, and search for contacts. In some places control has been accomplished by such means and the disease gradually extirpated. Where the invasion is only beginning, vigilance from the very onset is the only policy. The officer should waste no time in academic discussion of what he ought to call the malady, whether alastrim or small-pox or para-small-pox, or what else. His duty is to try to stamp it out and leave such topics for elaboration after he has done so. A complete list of contacts, with surveillance of them from the very beginning, is of infinitely more value than the devising of appropriate names for purposes of registration. Also, it seems to us that in the present circumstances of this country, and with the present type of small-pox, local health authorities may as well cry for the moon as for absolute compulsion of vaccination. If Parliament is wise it will exercise all reasonable pressure, and will at least reverse Mr. Wheatley's withdrawal of the order issued by Mr. Neville Chamberlain when previously at the head of the Ministry of Health, regarding the form of vaccination notice to parents; the altered form is as much an invitation to omit vaccination as a request for its performance. In the meanwhile the basic fact remains that every parent who chooses to do so can by vaccination and revaccination of himself and his family obtain complete protection against small-pox, whether mild or severe, diagnosed or undiagnosed, isolated in hospital or left uncontrolled. And for the instruction of such part of the public as is willing to accept instruction the data collated by Dr. Pearce from the United States Government's reports are to be added to the great store already available.

[1] See the BRITISH MEDICAL JOURNAL, March 29th (p. 584) and July 19th, 1924 (p. 123).

SLEEPING SICKNESS CONFERENCE.

AN international conference on sleeping sickness is being held in London this week under the chairmanship of Mr. Ormsby-Gore, Under Secretary of State for the Colonies; the other British representatives are Dr. Andrew Balfour, C.M.G., director of the London School of Hygiene and Tropical Medicine, and Dr. A. G. Bagshawe, C.M.G., director of the London Bureau of Tropical Diseases. The conference is being attended by representatives of France, Italy, Belgium, Portugal, and Spain. A committee of experts nominated by the League of Nations in 1922 to obtain information as to the prevalence of sleeping sickness and tuberculosis in equatorial Africa made a series

of recommendations, which were approved by the Council of the League of Nations at its session in Rome last December. One of the recommendations was that such a conference as is now meeting should be held. In opening the proceedings on Tuesday last, Mr. Ormsby-Gore said that one of the outstanding problems encountered during his recent tour in Central Africa was that of the human and animal diseases the infection of which was carried by tsetse flies. The tsetse fly, he said, occurred in belts of varying sizes practically throughout the whole of tropical Africa from Senegal on the north-west to Zululand on the south-east. The great outbreak of sleeping sickness in Uganda about twenty years ago, when roughly one-tenth of the total population of the protectorate died, had attracted much public attention in this country. The disease, though less severe, was still prevalent in Uganda, and a report from Northern Rhodesia had been received stating that an epidemic outbreak of a severe form occurred in 1923 in an area where its presence had not previously been recorded. The position was serious also in the Belgian and French colonies, including those in West Africa; one of the most important pieces of work in connexion with the problem had been carried out in the Portuguese island of Principe, and at the present time the disease caused grave anxiety in the Spanish island of Fernando Po. In 1900, shortly after the great outbreak in Uganda, an international conference was held in London; it met again in the following year; a general agreement was not reached, but Great Britain founded the Sleeping Sickness Bureau. During the outbreak in Uganda and Nyasaland in 1908 it was discovered that the infection was carried there, not by the tsetse, *Glossina palpalis*, which was the vector in Uganda, but by *Glossina morsitans*, which conveyed trypanosome diseases to domestic stock. The investigations of Dr. Kinghorn and Dr. Yorke in Northern Rhodesia, and of the Royal Society Commission under Sir David Bruce in Nyasaland, led to the appointment by the then Secretary of State for the Colonies of a committee; its report was presented to Parliament in May, 1914, but the outbreak of war a few months later prevented any immediate action. Other nations had taken the matter up, and Dr. Kleine had ascertained that a developmental cycle of the trypanosome occurred in the tsetse fly. Investigations into the treatment and prevention of the disease by the use of drugs were instituted by French, German, Belgian, and American scientists, but though questions of this nature have not yet been answered the most important problems at the moment were administrative. In Central Africa, where native social life and custom was so intimately bound up with the keeping of cattle and other domestic stock, the problems of sleeping sickness could not be dissociated from those of animal trypanosomiasis (nagana), and Mr. Hornby of the Tanganyika Veterinary Institute had made some valuable observations on the treatment of nagana, but the inquirers were everywhere brought back to the physical and administrative problem of the control and eventual extermination of the tsetse fly itself. The task was tremendous, but there was hope, and if the problem could be solved something very notable would be done for the African native and for the advance of civilization and development in Africa. Mr. Ormsby-Gore then referred to what he described as the very remarkable achievements of Mr. Swynnerton in the Shinyanga district of the Tanganyika Territory (of which that investigator gave some account in our columns not very long ago), and to what had been done by Father Cirvenga in another part of the same territory. During a visit to Shinyanga Mr. Ormsby-Gore had been able to satisfy himself that the experiments, which were on a considerable scale, were being attended by a large measure of success. The conference had been summoned to discuss the possibility of carrying out the recommendation of the League of Nations Council that a special international epidemiological commission should be sent to equatorial Africa. The terms of reference to the conference suggested that attention should be concentrated on the purely medical aspects of the problem as it affects sleeping sickness in man, but it was hoped that all sides of the question would be considered. The object of the commission, therefore, would be to survey the fly areas of tropical Africa, noting any extension or decrease, to make further researches into the bionomics of the tsetse fly, to make experiments on a field scale for the extermination of the fly, and to investigate the prevention and treatment of both human and animal trypanosomiasis. For such a task there would be required the services of entomologists, protozoologists, veterinary and medical scientists, and men of administrative and zoological experience such as Mr. Swynnerton.

THE PROJECTION OF THE RETINA IN THE BRAIN.

THERE appear to be two main schools of thought with regard to the projection of the retina in the brain. The one, led by Henschen, holds that every spot on the retina has a definite localization in the external geniculate bodies, in the optic radiations, and in the cerebral cortex of the occipital lobes. According to this view the macula is represented by a circumscribed area in the brain, and the dorsal or uppermost part of the retina is represented in the upper part of the geniculate body, radiation, and cortex. The other school, led by von Monakow, denies that each part of the retina has a definite localization, and holds that the macula is represented over a wide area. Dr. B. Brouwer, professor of neurology in the University of Amsterdam, in a lecture delivered at Charing Cross Hospital Medical School on May 15th, described the views of these two schools, and showed how recent work carried out by him had led him to take an intermediate position. He referred to the work reported by Holmes and Lister during the war, which went to support Henschen's theory. These workers found that bullet wounds of the occipital lobe caused localized patches of blindness in the fields of vision. His own method of investigation has been to enlist the aid of an ophthalmological colleague to make localized lesions in the retinae of experimental animals; these were killed some time later, and the areas of degeneration in the brain were then examined histologically after being treated by the Marchi method. In this way Professor Brouwer has been able to study the brains of some sixty animals. In rabbits, where a very high proportion of the optic tract crosses, the principle of an exact localization of each part of the retina in the external geniculate bodies was completely upheld. In cats, where more fibres appear to be uncrossed, this localization was still found to be fairly exact. Further experiments were then carried out on monkeys in which the arrangement of the optic tracts and the existence of maculae rendered the conditions very similar to those existing in man. The results in these cases were somewhat more difficult to interpret on account of the fact that there is only a small portion of the field of vision which can be seen by one eye alone, but the inner part of the retina, which is the part concerned with monocular vision, had been destroyed in certain monkeys, and areas of degeneration were found to exist in a localized portion of the lower part of the external geniculate body of the opposite side. The areas of degeneration corresponding to lesions of the macula were not small, but were spread out over a great deal of the external geniculate bodies of both sides. The parts of the retina nearest to the macula were represented in areas of the geniculate bodies nearest to the areas of macula projection, and the periphery of the retina was represented around the periphery of the geniculate bodies. Professor Brouwer thus agrees with Henschen as far as localization of retinal projection is concerned, and with

von Monakow in the matter of a large area of projection for the macula. He is at present engaged on further work in which he hopes to trace the projection of the retina in the cerebral cortex. He has also given a lecture on this subject at the University of Sheffield during the present week.

AMERICAN POST-GRADUATES IN LONDON.

THE programme of the visit to London of the Inter-State Post-Graduate Assembly of America from June 2nd to 4th is now complete. Arrangements have been made for lectures (at Wigmore Hall) in the mornings, beginning at 9.30, and hospital visits in the afternoons, continuing until 5 o'clock or later. In order that no time may be lost after lunch a fleet of motor buses has been chartered to convey the visitors to the hospitals. Following the inaugural ceremony by H.R.H. the Duke of York on the first morning there will be four consecutive lectures, each lasting half an hour, and on each of the next two mornings six such lectures. The chairmen at the three morning sessions will be Sir Humphry Rolleston, Sir John Bland-Sutton, and Sir StClair Thomson respectively. Sir Humphry Rolleston is to open the lecture list with a discourse on gall-bladder disease, and he will be followed by Sir W. Arbuthnot Lane on "The first and last kink," Sir Thomas Horder on "Changes in the incidence and course of common diseases," and Dr. A. F. Hurst on "The pathogenesis and treatment of Addison's anaemia and subacute combined degeneration of the spinal cord." On the second morning Professor H. Maclean lectures on renal disease, Mr. A. J. Walton on gastro-jejunal ulcer, Colonel L. W. Harrison on the combating of venereal disease by free treatment centres, Mr. W. E. Miles on cancer of the rectum, Mr. T. P. Dunhill on auricular fibrillation in exophthalmic goitre from the point of view of surgical treatment, and Dr. Strickland Goodall on the heart in influenza. On the final morning Dr. Gordon Holmes takes for his subject suprarenal disease, Sir Walter Fletcher medical research in Great Britain, Mr. James Sherren the choice of operations in gastric and duodenal ulcer, Sir StClair Thomson cancer of the larynx, Dr. H. C. Cameron functional nervous disturbances in children, and the last lecture is by Lord Dawson of Penn, whose subject is "The speed of life and disease." Post-graduate programmes for the afternoons have been offered by thirty-four general and special hospitals, the number of visitors to each institution being limited usually to twenty or thirty. The programmes generally include a round of the medical wards, surgical operations, clinical and pathological demonstrations, visits to special departments, the exhibition of historical and other specimens, and in some cases brief lectures. Practically the whole of each hospital staff will be at the service of the visitors. The institutions offering this hospitality include the Radium Institute and the London School of Hygiene and Tropical Medicine. On June 3rd the Royal Society of Medicine will give an evening party, when Mr. W. G. Spencer, honorary librarian of the Royal Society of Medicine, will exhibit over fifty examples of American medical literature before 1861. The executive committee, which is responsible for the arrangements as a whole, including a number of social functions in the late afternoons and evenings, consists of Sir Humphry Rolleston, Sir W. Arbuthnot Lane, Sir StClair Thomson, Sir William Hale-White, Sir Holburt Waring, Mr. W. Girling Ball, and Mr. Philip Franklin (honorary organizer). The medical programme committee consists of more than forty members, under the chairmanship of Sir Holburt Waring, and there are four honorary secretaries—namely, Professor Arthur Ellis (medical), Mr. W. Girling Ball and Mr. H. W. Carson (surgical), and Dr. Eric Pritchard (special departments). The bureau and headquarters will be at the house of the Medical Society of London, in Chandos Street, Cavendish Square, where also an exhibition of surgical instruments and medical products has been arranged. The Inter-State Post-Graduate Assembly of America, which is directed by the Tri-State District Medical Association, comprises, it is stated, 55,000 members. The number accompanying the President, Dr. Charles Mayo, to Europe on this occasion is expected to be about 300. The London visit will be followed by visits to Ireland, Scotland, and the English provinces, and later in the month the party will proceed to Paris, where Professor Tuffier has charge of the arrangements.

WELSH CRIPPLES.

As readers are aware, a movement for the better treatment of cripples and for their education during treatment has been making steady progress in England. An account of the position then reached was given in our columns on August 2nd, 1924 (p. 204), and since then meetings have been held in many counties, with the result that much public interest has in every instance been aroused. It is primarily a matter for the education authorities, but they require support and stimulation, and those concerned in the movement are in need of funds to carry on the crusade. The movement, although it originated in the marches of Wales—in Shropshire, at Baschurch, in the institution established by Miss Hunt—has not yet made much progress in the Principality. We are glad to learn, however, that attention is now to be given to the matter. The Welsh National Memorial Association, established for the treatment of tuberculosis, has already done a good deal by setting up hospitals at which non-pulmonary tuberculosis is treated. There is the North Wales Sanatorium at Llangwyfan, near Denbigh, the St. Bride's Hospital, recently opened in Pembrokeshire, and the Glan Ely Hospital, Cardiff, to mention only some of the largest. In this connexion the Prince of Wales's Hospital established in Cardiff during the war for the treatment of soldiers and sailors who had lost a limb should be mentioned. In its foundation Sir John Lynn-Thomas took the initiative, Lord Tredegar gave the site, and Mr. Percy Miles and some other wealthy men in Cardiff made large contributions for its equipment and endowment. The number of war cases has now largely diminished, and the hospital has been able to undertake the treatment of civilian cases from all parts of Wales and Monmouthshire. In addition to residential ward accommodation, which is already being largely utilized for children, it possesses workshops and exercising grounds, where the cripple can receive his earliest instruction. Sir John Lynn-Thomas, who is at present himself, we regret to learn, physically crippled by a fracture into the knee, sustained early in March while on a visit to Florida, is not allowing this handicap to interfere with the planning of a national scheme for Wales. A gift of £50,000 from an anonymous donor, to meet preliminary expenses, has just been announced. This gift and other contributions which may be received will be vested in trustees, whose first duty it will be to take a census of cripples; it is estimated that there must be at least 20,000 cases in Wales and Monmouthshire who need orthopaedic treatment. The English scheme, which owes its present advanced position largely to the leadership of Sir Robert Jones, is to be extended, with suitable modifications, to Wales, and the Prince of Wales's Hospital at Cardiff will, it is thought, offer suitable headquarters. It is intended to hold a conference in the autumn to which every health and education authority in Wales and Monmouthshire will be asked to send representatives. The scheme will then be fully explained by Sir Robert Jones and others, and, it is hoped, very shortly thereafter brought into action. It has the support, we understand, of the Welsh Board of Health and the Welsh Board of Education.

INTERNATIONAL CONGRESS OF RADIOLOGY.

THE International Congress of Radiology, which is to be held in London from July 1st to 4th, will consist of three sections—radiology, physics, and electrotherapy and physiotherapy. As the number of papers in the section of radiology is very large it will probably meet in two divisions sitting simultaneously, the one hearing and discussing papers relating to diagnosis, and the other those bearing on therapy. The section of electrotherapy and physiotherapy will hold three sessions; the first dealing with actinotherapy, and the second with diathermy. In the physics section Professor Hopwood will open a discussion on the organization of a hospital radium service. On the opening day that section will meet with the section of radiology for a discussion on the standardization of dosage, which will be opened by Sir William Bragg from the physical standpoint, and by Dr. Béclère of Paris from the medical. On the evening of that day the Duc de Broglie will give the Sylvanus Thompson memorial lecture, and has chosen for his subject the absorption of x and gamma radiations and the secondary radiations which accompany them. On July 3rd Sir Berkeley Moynihan will deliver the Mackenzie Davidson memorial lecture on the relation of radiology and surgery. The congress dinner will be held on the evening of the second day.

SPOKEN AND WRITTEN ENGLISH.

PROBABLY few people realize that the distinction implied in the above title exists. Dr. Henry Bradley, the senior editor of the *Oxford English Dictionary*, read a paper on the subject at the International Historical Congress as long ago as 1913. It has lately been reprinted by the Society for Pure English. It is a thoughtful pamphlet, and will well repay perusal. Dr. Bradley began by laying it down that, little as the fact may be realized, "speech and writing are two organs for the expression of meaning, originally co-ordinate and mutually independent." He thought it probable that written language was primarily ideographic, conveying ideas by means of a series of pictures, and that only secondarily did it become representative of the sounds of speech. Many educated persons do not appreciate to what an extent they read the written word, not as a combination of sound symbols, but as an ideograph or single symbol, the sight of which calls up in the mind the memory of a thing or an idea; we all know that when in doubt as to the spelling of a word we can often come to a right decision by "the look of it," on comparing the two spellings when written. Alphabetical language still preserves traces of its twofold origin, and among modern tongues English more than most shows differences between the written language of the educated and the spoken language of the multitude. This "undemocratic" character of the literary language is exaggerated by the classical tradition and by the number of words which have been borrowed and adapted from the dead languages, and of late years especially by the host of words coined mainly from the Greek to represent technical and scientific ideas and discoveries. Dr. Bradley expressed the opinion that many of these are scarcely used in the spoken language. The German method of Teutonizing every term does not recommend itself, for if the speakers of all languages followed it a scientific tower of Babel would be erected with dire results. He suggested that by international agreement all new scientific technical terms might be expressed in Esperanto or in some better universal language yet to be invented and adopted. While he looked upon radical spelling reform as impracticable, he admitted that the adoption of phonetic spelling would have some distinct advantages, among which not the least would be the greater ease of learning to spell and read and write. In a note on spelling reform he confessed that his ideas were exceedingly vague as to the extent to which reform is possible and desirable, but he thought that reformers should for the present confine the attack to those points for which there is no defence but custom. The number of homophones or words sounding alike but spelt differently and with different meanings constitutes a difficulty. If the "p" in "psychosis" and suchlike words were habitually sounded we should abolish the anomaly under which a mental derangement and a skin disease are represented by the same sounds. As regards the teaching of correct pronunciation, it must be remembered that a phonetic notation which represents correctly all the sounds in the language is something quite distinct from the more debatable phonetic spelling, which might correctly represent the speech of the educated Londoner but not that of the Aberdonian scholar, and which also might be gradually rendered inaccurate by changes of customary pronunciation, as has happened with many words in use to-day. In Chinese an ideographic character may represent all the widely differing sounds given to the same word in many dialects the speakers of which are mutually incomprehensible; consequently the written language is not subject to the same changes as are found in the alphabetical languages that attempt to convey the sounds of speech by written words.

WAR MEMORIAL TO WOMEN.

THE famous Five Sisters Window of York Minster, which has been restored by women of the Empire in memory of women who gave their lives in the war, will be unveiled by the Duchess of York on June 24th at 3 p.m. An oak screen has been placed in the Minster with the names of the women to be commemorated. There are several women doctors on this roll of honour, and it is hoped that as many of their colleagues as possible will be present on this occasion to pay tribute to their memory, whether they did war work or not. As all representatives will be wearing uniform, it is requested that all medical women present shall wear academic dress. All who have decorations are asked to wear them. During the time of the ceremony at the Minster memorial services will be held throughout the Empire—in Australia, Canada, and New Zealand. The railway companies will give special terms—return tickets will be issued at one and a third single fare, or, for parties of twelve and over, at the price of the usual single fare. Dr. Louise Fraser has organized the medical deputation, and it is asked that applications should be made to the honorary secretaries, Women's War Memorial, Assembly Rooms, York, as early as possible.

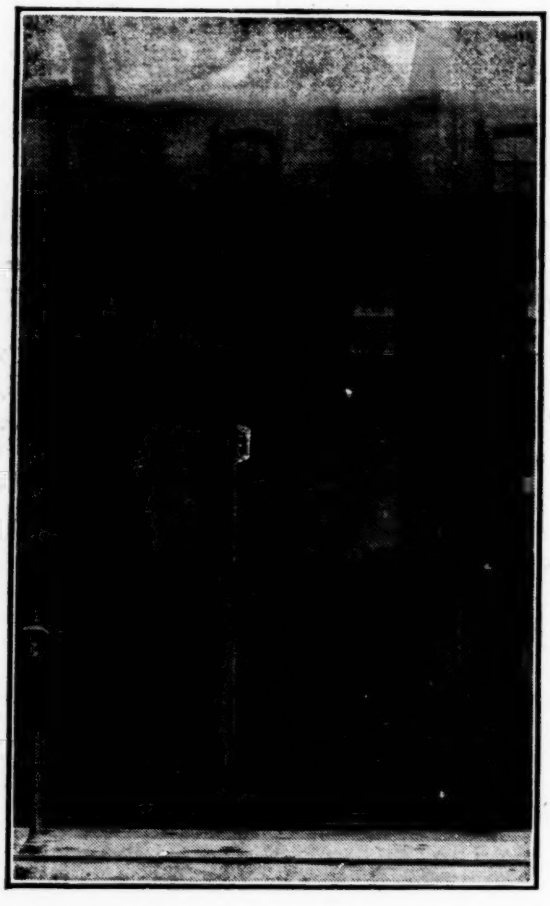
THE "BRITISH MEDICAL JOURNAL": NEW ADDRESS.

DURING the Whitsun holidays the Editorial and Printing Departments of the BRITISH MEDICAL JOURNAL will be removed from 429, Strand, to the new headquarters building of the British Medical Association in Bloomsbury. After Thursday, May 28th, the postal address for all communications intended for the Editor will be "BRITISH MEDICAL JOURNAL, British Medical Association House, Tavistock Square, W.C.1," the telephone number of the Editorial Department will be Museum 2864, and the telegraphic address "Aitiology, Westcent, London." Until further notice is given in these columns, all communications with reference to advertisements, as well as orders for copies of the JOURNAL, should continue to be addressed to the Financial Secretary and Business Manager, 429, Strand, W.C.2. It is expected that the Medical Department and the Library of the Association will be removed about June 17th, and the Finance Department about June 19th.

THE ASSOCIATION'S NEW SCOTTISH HOUSE.

RESULTS have amply justified the policy of the Council of the British Medical Association in granting a measure of devolution to Scotland: first by the establishment in 1903 of a Scottish Committee with a remit to "report to the Council on any matters specially concerning Scotland"; and, secondly, by the appointment in 1919 of a whole-time Scottish Medical Secretary (Dr. J. R. Drever), and an enlarged remit to the Scottish Committee to "consider all matters specially concerning Scotland, and, in conformity with the decision of the Representative Body, deal with all such matters." Premises in Rutland Square, Edinburgh, were secured for the Scottish Office. A quickening and deepening of interest in the affairs of the Association among the members in Scotland and a notable increase in membership have ensued from these changes.

With the membership of the British Medical Association touching 3,000 in Scotland, and still increasing, and with the Scottish Committee bearing its share of the growing activities of the Association, the Council, in December last, cordially approved a recommendation of that Committee that "it is desirable that the Association should own its own house in Scotland." Suitable premises were found in the property occupied by the late Dr. Brewis, at 6, Drumsheugh Gardens, Edinburgh, and were acquired by the Council. The Scottish Office is now in occupation there, and a ceremonial opening has been fixed for Thursday, June 4th.



No. 6, Drumsheugh Gardens, Edinburgh.

Situated in one of the noblest of Edinburgh's many noble streets, in the heart of the west end, and convenient of access from all parts of the city, the building in Drumsheugh Gardens is in every way suited to its purposes. Its four floors offer more accommodation than is required for the immediate needs of the Scottish Committee of the Association, and the upper two floors have been let on lease to the Meteorological Office of the Air Ministry. On the ground floor the Scottish Medical Secretary and his staff have been housed in a handsome suite of offices, and on the first floor there is a hall with seating accommodation for 150, with ante-room and cloak rooms. The hall will serve as a Committee and Conference Room, as well as for Divisional and other meetings. It is hoped that kindred professional societies may find in it a convenient meeting place, and already the Edinburgh Medico-Chirurgical Society and the Edinburgh Obstetrical Society have arranged to hold their June and July meetings there.

The opening ceremony on June 4th is to take the form of a luncheon in the new house, to which a number of distinguished guests have been invited. The Secretary for Scotland, the Right Hon. Sir John Gilmour, Bt., D.S.O., has accepted an invitation to be present. The chair will be taken by Dr. C. E. Douglas (Cupar, Fife), Chairman of the Scottish Committee of the Association.

Scotland.

MAN'S EVOLUTION.

A REPORT of the first three of the course of Munro Lectures on the evolution of man, delivered by Sir Arthur Keith at the University of Edinburgh, was published last week (p. 941). In the next lecture he dealt first with the remarkable race of mankind which inhabited Europe throughout the long period of Mousterian culture from 40,000 to 20,000 years ago, and ended abruptly with the advent of the Caucasian. The existence of Mousterian Europe had been first disclosed by a gang of German navvies who were clearing out the Neanderthal cave north of Düsseldorf in 1857, and had found in the strata a fossilized human skeleton. This was fourteen years before the appearance of Darwin's *Descent of Man*, and the anatomists of the time had concluded that they were dealing with a descendant of Noah who had strayed into Europe after the flood had abated. By good fortune Sir Charles Lyell obtained a cast of the skull, and he and Huxley had recognized that it was both ancient and primitive, and moulded on ape-like lines. More recently a score of men and women of this ancient Neanderthal type had been discovered, and much had been elucidated by taking casts of the interior of their skulls in regard to the size, shape, and pattern of the brains. Stone implements of this period had been discovered showing high skill, resource, and a power of invention. It had also become known that the men of that time knew the uses of fire, were expert hunters, and buried their dead with ceremony, laying with them implements, ornaments, and apparently joints of meat. All these facts had come to light in the course of explorations during the present century. This civilization had disappeared 20,000 years ago when our ancestors, the Caucasian pioneers, made their way into Europe. There did not appear to have been any interbreeding between the two races, although the Caucasians had apparently existed in Europe during the period of Mousterian culture, for both in the valley of the Thames and the valley of the Seine the bones of Neanthropic or Caucasian man had been found embedded in strata of a pre-Mousterian date, and this led to the supposition that men of our type had broken into Europe and obtained a temporary foothold before their final settlement at the end of the Mousterian period. In the fifth lecture the most ancient English person, probably a woman, whose skull had been discovered at Piltdown in the county of Sussex, was discussed. This went back some 10,000 years to the point where the present period of the earth's history began and where the Pleistocene period ended. The Piltdown fragments were found in a bed of gravel laid down by the Ouse of Sussex, before that river had eroded its valley, which is now over 80 feet in depth. From subsequent discoveries it appeared that this Piltdown race had mastered such arts as the capturing of elephants and the hewing of implements from their thigh-bones, although their skulls presented a mosaic of characters in which anthropoid and human features were blended. In the sixth lecture Sir Arthur Keith, dealing with South Africa in prehistoric

times, said that Africa south of the equator had recently begun to rival Europe as the scene of prehistoric discovery. Along the coast of Cape Colony were many kitchen middens of large size, made by the Strandloopers, an extinct race allied to the Hottentots. Near these were ancient graves and caves which had been inhabited by man in early times; only a few had yet been explored, but it was now certain that the valley and banks of the Zambesi and of the Orange River had been inhabited by man in remote times. A sequence of forms could be recognized in the stone implements which broadly corresponded to those of Europe. It was possible that the inhabitants of both continents had borrowed a common inspiration from an earlier source. South Africa had been one of the most prolific of the gardens of Eden, producing such strange types as Bushmen and Hottentots, ancient peoples now rapidly approaching extinction. These were, however, special negroid developments, and they were no more and no less akin to the ape than were the Caucasians. Indeed, many of the extinct Strandloopers had large skulls and big brains. Two fossil skulls of large size had been found—one at Boskop in 1913 and one in a cave of Cape Colony in 1921, in strata which placed them about 15,000 years ago. The Sahara had been a very ancient barrier. As the ice sheet had spread southwards in Europe, the fertile belt spread southwards in the Sahara and narrowed the barrier, but never obliterated it. There had always been a clash of races in South Africa, and when the Dutch landed at the Cape three centuries ago the Zulu and Matabele types were extending southwards and exterminating the pastoral Hottentots, as these in turn had exterminated their cousins, the Strandloopers. In the seventh lecture, on recent discoveries of fossil ape and man in Africa, the lecturer dealt specially with the Taungs skull, discovered last year near Kimberley. Rhodesian man was clearly, he said, a cousin of Neanderthal man. Taking all the evidence into account, the African type was older and in every respect more primitive, more like the ape, than the Neanderthal. Whatever his geological age might prove to be, he represented a stage which we expected our ancestry to have reached at the opening stage of the Pleistocene period, at least 100,000 years ago. In facial feature the Rhodesian man was more like the gorilla than any other known species of man. Indeed in the width, prominence, and strength of his supraorbital ridges he outdid the male gorilla, but his canine teeth were not prominent as in the anthropoid, and his jaws were human in shape though ultra-human in dimensions. The fact that his teeth had suffered from caries led to the supposition that Rhodesian man had already discovered the uses of fire and the art of cooking. The characters of the Taungs skull discovered at the end of last year in a block of limestone corresponded to the stage reached by a child in the sixth year and by a chimpanzee at the beginning of the fourth; and the lecturer agreed with the opinion expressed by Professor Arthur Robinson that the skull was that of a young anthropoid ape, although of an extinct kind. In the size of the brain the Taungs animal was altogether anthropoid, while the jaws and face were essentially those of a young chimpanzee.

Industrial Efficiency.

A letter has been sent to the Scottish newspapers by the Lord Provosts of Edinburgh, Glasgow, Dundee, and Aberdeen, by the medical officers of health of these cities, and by the officials of the Industrial Educational Council, upon the subject of sickness and diseases of an occupational nature which lead to inefficiency. The communication deals with the work of the Industrial Educational Council, which is intended to give intensive and effective information in regard to the conditions of healthy living and the methods by which these may be obtained under varying conditions. Workers are to be approached through their own organizations, and this has been made possible by a recommendation of the Scottish Trades Union Congress Council to its branches to avail themselves of the health talks which are open to members of trade unions, and to all engaged in particular industries. A large number of meetings have been attended by workers and their wives. It is reckoned that at least 2,000,000 weeks' work is lost annually in Scotland through sickness and disablement among insured workers, and that 50 per cent. of this would have been avoided if the workers had had the necessary knowledge. These health talks have been given to miners, bakers, printers, foundry workers, railway men, clerks, administrative workers, granite workers, steel workers, building trade workers, textile workers, etc., and in each case the workers' organizations have paid part of the expenses. During the period from October, 1925, to March, 1926, it is hoped to organize 200 health talks in Scotland. The council is composed chiefly of medical men, who have readily responded by giving their services without remuneration. To cover a five years' programme, however, £10,000 is needed, towards which about £700 has been received and spent on work already being carried out. If funds permit, it is desired to issue to the workers printed information on the subjects dealt with, and an appeal is made for subscriptions, which may be sent to the Secretary, Mr. J. Mackenzie, 21, Waterloo Place, Edinburgh, to whom also applications may be made for the health talks.

Ireland.

Health Insurance and Medical Services.

Interim Report of the Committee.

The Committee of Inquiry into Health Insurance and Medical Services has submitted an interim report embodying the results of the investigations it has made up to the present time.

The Committee sets out under seven heads the main defects alleged against the case made in respect of each of them by the witnesses examined, of whom the Committee states there were forty-nine, representatives of the different interests concerned:

"(1) Owing to its association with Poor Law administration a persistent prejudice exists against the dispensary system.

"(2) The absence of a statutory right to pension occasioned the abuse of medical officers clinging to office after their professional usefulness had ceased.

"(3) Grave abuses exist in some districts affecting injuriously the election of medical officers; bribery, direct and indirect; political pressure; undue influence of relatives.

"(4) Some of the dispensaries, especially the branch dispensaries, are unsuitable for the purposes they are intended to serve, and in some cases insufficiently equipped.

"(5) The salaries of dispensary medical officers, first fixed in the middle of the last century, remained almost unchanged up to the beginning of the present century in spite of greatly increased cost of living and of the longer course of education required in order to become a medical practitioner. In 1904 the average salary of a medical officer in Ireland was £109. There was a slight gradual increase during the following ten years, and in 1914 the average had become £130. The average salary in the Saorstat is now £251, a sum which does not show much, if any, advance as regards purchasing power on the salary paid in 1904. In many cases the salary cannot pay the necessary out-of-pocket expenses of travelling through a dispensary district. Candidates have in the main been induced to join the Dispensary Service, not by the remuneration offered as salary, but by the prospect of earning a livelihood in private practice in the district.

"(6) There have always been great inequalities in the amount of salaries paid to medical officers in different areas. Moreover, the lower salaries prevail in those areas where the prospects of private practice are least. Although the Dispensary Service has always contained many medical officers of skill and devotion, it has never been attractive to the more ambitious of young Irish doctors; as a consequence not a few have been compelled to go abroad.

"(7) There is no arrangement in the Dispensary Service to provide medical officers with the opportunity of refreshing and increasing their knowledge by attendance on courses of study at recognized centres. As medical and surgical knowledge are advancing rapidly, it becomes increasingly necessary to give medical officers opportunity for such further study.

"The Committee gave serious consideration to these alleged defects in the medical services comprised in the Medical Charities Act. In our view the evidence in support of (1) was given by persons lacking knowledge of the working of the Dispensary Medical Service in counties where the development of the administration has proceeded according to the policy of the Department of Local Government and Public Health. The witnesses for the most part relied on their experience in the city of Dublin or in places where county administration is too recent to be yet effective or on experience of the system prior to the amalgamation of unions. We consider that the unification of the dispensary and hospital service under special county

committees will, when such schemes have had time to develop, remove the former prejudice. This system of committees, distinct from county homes and home assistance committees, should be extended to every county in the Saorstat. As regards (2) a fixed retiring age is not necessary. The right to pension under Section 8 of the Local Government Act, 1919, has enabled medical officers to retire before their functions are impaired by old age, and has, it would appear, practically put a stop to the abuse complained of. The Local Government Bill (1924) now awaiting the decision of the Seanad is framed to regulate further the pensioning of medical officers. In respect of (3) many witnesses stated that they would prefer to transfer the power of selecting medical men for public appointments to a central authority; the witness representing the County Councils General Council advocated this as a necessary reform while awaiting the setting up of a State medical service. With a view to eliminating the taint of corruption and inefficient modes of appointment, selection committees, consisting of independent professional experts and selected public representatives, have been tried as an expedient, with so far not unsatisfactory results. In our opinion such medical appointments for the present should be made by special tribunals under the aegis of the Civil Service Commission; thus, as the circumstances of particular appointments may require, the test to be applied might be (*a*) examination alone, (*b*) examination supplemented by consideration of experience and general fitness, and (*c*) in some cases selection without the formal test of an examination. In (4) there is much substance. Undoubtedly many dispensary buildings are unsuitable. The practice of granting advances out of the Local Loans Fund for the provision of new buildings under the Dispensary Houses (Ireland) Act was, unfortunately, discontinued under the restriction of borrowing during the world war. Where unsuitable accommodation is now provided the local authorities should be required to remedy the defects. As regards (5) and (6) we accept the case made in the first paragraph of (5). The Department of Local Government and Public Health, particularly in the last few years, has used its influence to improve the remuneration of the dispensary medical officers. In twenty county areas scales of salaries are now regulated and revised so as to be on a uniform basis within each county area. The problem has yet to be dealt with in ten county areas. The adjustment of the medical officers' salaries in Roscommon, Longford, Leitrim, Cavan, and Mayo was deferred owing to economic and other reasons. In Cork the amalgamation of unions is of too recent date to permit the actual operation of a scheme. The increase of salary shown by the average figure for the year ended March 31st, 1924, upon the figure admitted to have been grossly inadequate in 1904 is, however, more apparent than real owing to the increased cost of living. We hope to deal more fully with the matter in our final report. The Committee approves the suggestion in (7), and recommends that 'study leave' for a period not less than three months should be granted at least as often as once in every five years, and that evidence of having taken advantage of such opportunities should receive consideration where promotion is in question. During 'study leave' the medical officer should, subject to regulations, receive full salary without deduction for payment of a locum tenens; a grant might be provided to cover fees for study. The Department of Local Government and Public Health has already, within the limits of its powers, granted facilities of the kind to medical officers. There is, however, no legal authorization for paying a locum tenens during the period of absence."

ULSTER MEDICAL SOCIETY.

The annual meeting of the Ulster Medical Society was held in the Medical Institute, Belfast, on May 14th, when the President, Dr. Singleton Darling of Lurgan, was in the chair. The reports of the council, of the librarian, and of the treasurer, which showed a credit balance of £170, were read and passed. On the proposal of Professor Thomson, seconded by Dr. McKisack, a hearty vote of thanks was passed to Dr. Marshall on relinquishing office as honorary secretary. The following office-bearers were elected:—*President:* James A. Craig, M.B., F.R.C.S.Eng. (Belfast). *Ex-President:* J. Singleton Darling, B.A., M.D. (Lurgan). *Vice-Presidents:* W. Burns, L.R.C.P.S.Ed., D.P.H.; Thomas Killen, M.B., F.R.C.S.Eng. (Larne). *Council:* A. Dempsey, M.B., B.Ch.; G. G. Lyttle, M.B., B.S., M.R.C.S., L.R.C.P.; Professor R. J. Johnstone, M.B., F.R.C.S.Eng., M.P.; H. P. Malcolm, M.C., M.Ch.; R. Marshall, M.D., F.R.C.P.I.; P. O'Flaherty, M.B., B.Ch. *Honorary Treasurer:* T. T. Lewis, M.D., B.Sc. *Honorary Librarian:* W. L. Storey, B.A., M.D. *Honorary Secretary:* R. Maitland Beath, M.B., B.S. *Honorary Editing Secretary:* J. A. Smyth, M.D., B.Sc.

England and Wales.

ULTRA-VIOLET LIGHT INSTALLATION AT BATH.

THE new ultra-violet rays department at the Royal Baths, Bath, was formally opened on the afternoon of Saturday, May 16th, by the Mayor of Bath, Alderman Cedric Chivers. The company included the Chairman (Councillor C. H. Hacker) and other members of the Baths Committee; Mr. John Hatton, director of the Baths; Alderman Preston King, M.D.; Dr. F. G. Thomson, President-elect of the British Medical Association; Dr. J. F. Blackett, medical officer of health for the city; and many other members of the local medical profession. The principal guest was Dr. Leonard Hill, F.R.S., director of the Department of Applied Physiology and Hygiene at the National Institute for Medical Research at Hampstead, who gave an address on ultra-violet rays and their application. After a brief reference to the knowledge of the curative effect of sunshine in ancient and mediaeval times, he spoke of the injurious effects upon health of the sedentary indoor lives led by the overclothed inhabitants of modern cities. He then explained briefly the difference between the active invisible rays beyond the violet end of the spectrum and the dark heat rays beyond the red end. The action of the former on the skin depended, he said, first, on penetration, and secondly, on absorption, and he indicated the effects of ultra-violet rays of different wave-lengths. The intensity of any source of ultra-violet radiation could be measured by means of a solution of 30 per cent. acetone coloured with methylene blue. Discussing the therapeutics of artificial sunlight, Dr. Hill spoke of the remarkable benefit, especially in children, of arc-light lamps in chronic infections of obscure origin. He was sure the bathing establishment at Bath would find the new installation a most valuable adjunct to its treatment of many cases, particularly in winter. At the conclusion of the address questions were asked by medical members of the audience, mainly regarding the details of treatment. Dr. F. G. Thomson, in seconding a vote of thanks to Dr. Leonard Hill, said he had been extremely impressed by two things: one was the value of ultra-violet light therapy, and the other was that this was a form of treatment which must not be used lightly, but needed very careful, serious study by those proposing to use it. Obviously, a new form of treatment such as this was open to very serious abuse unless great care were exercised. After the opening ceremony many of the visitors inspected the new department, where a demonstration of the treatment had been arranged.

CRIPPLING DUE TO FRACTURES.

The delivery of the lecture on "Crippling due to fractures: its prevention and remedy," given before the University of Liverpool by Sir Robert Jones on the afternoon of Tuesday, May 12th, and printed as the opening paper of our last issue (p. 909), was not attended by much formality. The vice-chancellor, Dr. Adami, briefly stated the circumstances attending the foundation of the Lady Jones Lectureship. Mr. J. Rankin gave £2,500 in memory of Sir Robert Jones's wife in 1918. By the addition of annual interest the sum had been increased, and it was decided to devote the proceeds to the institution of a research scholarship in orthopaedics and of a biennial lecture on the subject. Sir Robert Jones's plea for better organized teaching and for the more systematic treatment of fractures was followed with great attention by a large audience, which seemed to agree with his thesis—that an insufficient treatment and neglect might transform a simple fracture into a chronic deformity, it was not open to the teaching hospitals and other large hospitals to shirk the responsibility of establishing a system for the adequate treatment from the first of fractures of the limbs. There can be no doubt that great numbers of adult cripples are manufactured by want of continuous efficient treatment from the time of the injury, and that the medical student has not, as a rule, sufficient opportunity for learning what are the best modern methods available.

France.

[FROM OUR OWN CORRESPONDENT.]

The Working of the Insurance Act.

PROFESSOR SERGENT has recently pointed out to the Academy of Medicine that the provision of the law relating to medical insurance which gives all sick persons the free choice of doctor will have some curious effects on the administration of Paris hospitals. There is nothing, he said, to prevent an in-patient from calling in any doctor he may select out of the 5,000 practising in Paris. It might even happen that forty patients in one ward would be separately treated by different doctors, each one employing his own pet method. In this way anarchy would be produced, hospital administration would pass out of the hands of the Assistance Publique into those of the insurance societies, and there would be no guarantee of medical efficiency. The beautiful theory of democracy which maintains that any man is as good as any other would be applied to the medical profession; doctors would all be assumed to be equally competent, and obviously the instruction of students would lose much. In fact, we should return to a system of classes devoted entirely to didactic lectures, and the old system of beginning the clinical teaching of the student at the bedside would come to an end. This would mean that clinical demonstrations in the theatre would replace that study of teacher and taught in common which has been the charm of our system and the secret of the strength of the French medical school. *Dii talem avertite casum!*

Public Health and the Budget.

Before the same learned body Professor Bernard attacked the recent decision of Parliament to withdraw on the score of economy a sum of 132 million francs from the public health estimates. Since the war great efforts have been made to deal with preventable diseases, and the results are already striking. The economic value of public health, however, is not obvious to the public eye: statistics make no appeal to the imagination. To grudge money for the fight against disease would have a ruinous effect on the country in two ways—by loss of men and loss of money, for the result on the expenditure on institutional treatment for incurables, the loss of working capacity, and waste of all kinds, would be terrible. It is calculated that if the State would devote 20 million francs a year to the fight against syphilis alone it would save thousands of millions. While England was spending 567 francs per thousand people in this branch of prophylaxis France only spent 77 francs. The Department of the Seine alone treated in hospital 1,890 general paralytics at an annual cost of 9 million francs. To this is to be added the cost of the treatment of the insane and of those suffering from diseases of the spinal cord. Reductions in the public health estimates reveal themselves in heavy charges on the State later on. Alas! the opinion of the Academy of Medicine weighs very little in the parliamentary scales.

British Surgeons in Paris.

Last month a party of British surgeons, some twenty in number, visited the chief surgical clinics of Paris. The party, members of the Chirurgical Club, consisting of surgeons from the extra-metropolitan medical schools of England and Scotland, was led by Professor Marnoch of Aberdeen. The party witnessed operations performed at different hospitals each morning. They were particularly interested in a demonstration of the radiographic diagnosis of gall stones in the clinic of Professor Duval at the Hôpital de Vaugirard, and in the skiagrams of the gall bladder obtained after an intravenous injection of an iodine salt, in the clinic of Professor Gosset at the Salpêtrière Hospital. Visits were also paid to the Radium Institute founded by Madame Curie, and to the Pasteur Institute, where the tomb of Pasteur was specially opened for their inspection.

International Society of Medical Hydrology.

At the International Society of Medical Hydrology, which held its first meeting in Paris on April 20th, no fewer than eight countries were represented. The society was founded in London in 1922, and is now flourishing. The meeting discussed the question of the treatment of diabetes by insulin from the hydrological point of view, and also the treatment of rheumatic exudations following trauma. A dinner, presided over by Professor Carnot, was attended by representatives of the Institut d'Hydrologie, the Collège de France, and the French Government. On the following days demonstrations were given at the Sorbonne by Professor Urbain; at the Faculté de Médecine by Professor Desgrez; and at the Collège de France by Professor Lepape. Hydrology is at last being recognized in France as a specialized science and an important part of therapeutics. It is curious to reflect that the first kind of treatment used in the history of mankind should be the last to be taught in our modern medical schools.

G. MONOD.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons has this week read the Widows', Orphans', and Old Age Pensions Bill a second time by 401 to 125, and has sent it to a Committee of the whole House. Other business has included a debate on the Ministry of Transport Vote, and an effort was made to get the Poor Law Emergency Continuance (Scotland) Bill through its remaining stages. Debate on the Finance Bill will commence next week.

The Medical Committee met on May 18th, when Mr. W. G. Spencer addressed it on the supply of cadavers for anatomy and operative surgery, remarking incidentally that boards of guardians were more willing to supply subjects for the second purpose. He did not suggest special legislation, but that the Committee should see whether it could help to reduce present difficulties in ensuring a supply of subjects for dissection. The Committee next discussed small-pox and vaccination, exploring the present position and the possibilities of further action, including introduction of a private bill to focus public opinion.

In view of the unsatisfactory reply given by the India Office to Sir Richard Luce's question, the Committee discussed the unsatisfactory conditions at present existing, and agreed to continue to press the Government for an early change in them. The Committee considered also the amendment, in regard to the supply of insulin, which Dr. Shiels had moved to the Public Health (Scotland) Bill; it was suggested some compromise should be effected between the terms of the bill which did not enjoin any method of supply and Dr. Shiels's proposal that insulin should be supplied only by chemists. The general feeling of the Committee was that insulin should be supplied either through a chemist or a doctor.

The Committee decided that it could not support a proposed petition to the Prime Minister in favour of allowing former mental patients to give evidence in public before the Lunacy Commission.

An invitation was received from M. Spahlinger for the Medical Committee to visit his research station in Switzerland. The Committee decided that it would be well if some of its members could go to Switzerland for the purpose, but that it could not, as a body, accept the invitation unless and until it had received a report from any such members.

The Pensions Bill.

The second reading of the Widows', Orphans', and Old Age Contributory Pensions Bill was moved by the Minister of Health on May 18th. He explained that the scheme was linked up with health insurance, chiefly for the reason that the latter covered so much wider a field than unemployment insurance, including something like 15,000,000 workers against 12,000,000. The Government proposed to invite the assistance of the approved societies in providing certificates of the insurance by virtue of which a man would become entitled to benefits under the bill, but the pensions would be paid through the Post Office. Under the National Health Insurance Act an insured person at 70 was entitled to free medical benefit for the rest of his life. But, if he had only reached 65, and ceased to be employable and passed out of insurance, then he lost the right to medical benefit. That had been a considerable grievance, which the provisions of the bill amended. The third schedule of the bill provided that in future insured persons who reached 65 would have this boon of medical benefit for the rest of their lives.

The grounds of the opposition to the bill by the Labour party were stated by Mr. Wheatley, the ex-Minister of Health,

who moved its rejection on the ground that it was a contributory system and provided allowances which were inadequate.

Mr. Lloyd George asked whether it was not possible to have another benefit. The bill did not cover all accidents against which the industrial population had to insure. Before the Health Insurance Act there were two capital charges of which the working classes had always been frightened, one of which was the doctor's bill after a prolonged illness. In the past that took years to wipe out, and the only contributor very often was the doctor himself. ("Hear, hear.") The doctors lost three-quarters of these bills in that respect, not because the workmen would not, but could not, pay. That difficulty had been disposed of by the Health Insurance Act. The other trouble was funeral expenses. There were 50,000,000 voluntary insurances to-day against payment of funeral expenses, and if there were a compulsory insurance for £10 per person it would be a great boon. He urged that the pension should not be awarded at 65, but on a disability basis.

The debate was resumed on May 19th, when Dr. Fremantle said that while in the meantime he supported this magnificent measure of social reform, he felt that money was being wasted by giving pensions rigidly to those who were 65 years of age. The Government actuary's tables were based on the life tables, but the mortality rates were diminishing, and were likely to go on diminishing for some time. In the course of the next forty years the number of people between 65 and 70 years of age would have nearly doubled. Not only had the expectation of life increased, but the length of working life had also been increased. The present pension scheme permanently threw people out of work at 65, but he was sure that in future the pension scheme ought to be on a disability basis. The decision, as in the case of war disabilities, would be by a medical board, diluted by such other elements as might be required.

Proposed Coroners Bill.

In the House of Lords, on May 19th, Lord Darling called attention to the not infrequent practice of coroners' courts holding inquests simultaneously with the hearing by justices of charges against persons arrested and accused of murder or manslaughter of the deceased person. He suggested that if at any inquest the coroner was informed, before the jury had given their verdict, that some persons had been so charged, then it should be the duty of the coroner, in the absence of good reason to the contrary, to adjourn the inquest. The Lord Chancellor, in reply, agreed that a certain amount of mischief resulted at present in these cases, and as a witness of the tragedy might have to give evidence four times great expense was involved, while the case of the accused man was sometimes prejudiced. The Government proposed to introduce a bill dealing with the whole law of coroners and a number of other matters which had arisen in connexion with inquests. The bill would contain a clause much to the effect suggested by Lord Darling. The bill was ready, and was only awaiting the approval of some local authorities to some financial matters. He hoped that within a short time it would be introduced and passed into law.

The Distribution of Insulin.

During the debate on the Public Health (Scotland) Bill in the Standing Committee on Scottish Bills, an amendment was moved by Dr. Shiels to provide that medicines for the treatment of diabetes under the bill should be supplied (*a*) by chemists and druggists, and dispensed either by or under the direct supervision of a registered pharmacist; or (*b*) through a registered pharmacist in the employment of the local authority, except that, where circumstances made it necessary, the supply might be obtained from a medical practitioner. Dr. Shiels said there was a suggestion that because it was made up in a form already complete and standardized and did not require compounding, it was unnecessary for a specially qualified person to be concerned in its distribution. That struck at the root of the Pharmacy Acts. Insulin was already supplied under the National Health Insurance Acts, which provided that it must be supplied under the supervision of a qualified pharmacist. Insulin was also supplied by Poor Law authorities, and there again its distribution was supervised by qualified persons. Under the present bill the public health committees of county and borough councils would probably have the distribution of insulin. Large authorities already had properly qualified pharmacists in their employment, and in other cases the patients were treated by their own doctors, who would supply insulin paid for by the local authorities. With these cases the amendment did not propose to interfere. Insulin was injected hypodermically, and a practice had necessarily grown up whereby patients were instructed in the hospitals before they left as to the method of injecting insulin for themselves. That was now quite a general practice, and it was one which the amendment sought specially to deal with. The insulin which such patients used was supplied by a properly qualified person. The bill was only a beginning of a much wider application of the same principle of the supply of drugs to the public. The executive of the Pharmaceutical Society urged that the amendment should be adopted.

The Secretary for Scotland (Sir John Gilmour) said that it would be dangerous to admit that the issue of insulin should be confined in present circumstances to chemists. The actual preparation should be conducted by those qualified to do it, but the Scottish Board of Health, working with the Ministry of Health in England, had been able to obtain insulin in bulk more cheaply than the ordinary chemist could retail it. This was a fresh departure and undoubtedly one of the greatest importance. The department had been able to obtain insulin at something like 2s., as against 2s. 8d. by the other method. The treatment must originate either in a hospital, or in a clinic, or under direct medical supervision. There had crept into Dr. Shiels's speech some idea that chemists were going to advise and to supervise the use of the drug. That would not be the province of the chemist. The Government must resist the amendment.

The amendment was then negatived without a division and the bill was reported to the House.

Medical Services in India: Pay and Allowances.—Sir Richard Luce asked Earl Winterton, Under Secretary for India, on May 18th, if the married officers of the Royal Army Medical Corps, the Royal Army Veterinary Corps, and the Army Dental Corps, serving in India, were still excluded from the increased pay and allowances, including quarters, recently granted to other branches of the British Army, by which exclusion a major of the Royal Army Medical Corps received 75 rupees a month less than a senior captain of the Royal Engineers, and 5 rupees less than a captain of the Royal Army Service Corps; and if he would assure the House that members of these three services would not eventually suffer by reason of the delay involved in the consideration of their case. Earl Winterton replied that the case of the services mentioned had been reserved for separate consideration in view of the possibility of changes affecting them in the near future. If the examination of the cases revealed sufficient grounds, increases would be given from the date which might be appropriate. Dr. Fremantle asked if His Majesty's Government would take steps to accelerate this matter in order to get some officers for the examination to be held in July. Lord Winterton was understood to reply that that matter did not depend on the India Office or on the Secretary for India, but on the Government of India. The considerations he had mentioned had reference to the possibility of a change affecting the home services, and until that was settled it would be difficult to come to a decision in the other case.

The Medical Acts.—In reply to Mr. Basil Peto, the Minister of Health said his attention had been called "to the action of the General Medical Council under the powers conferred on them by Section 29 of the Medical Act, 1858, in causing to be struck off the *Register* the name of a doctor on the ground that he was guilty of infamous conduct in administering anaesthetics to a patient of a manipulative surgeon not possessing a degree qualifying him to practise in medicine or surgery." Mr. Peto further asked whether Mr. Chamberlain would consider the need of amending the Medical Act in order to give the same right of appeal against decisions under Section 29 of the Medical Act to the Privy Council which is given in the Act under Sections 23 and 24. Mr. Chamberlain replied that the sections of the Medical Act, 1858, which Mr. Peto mentioned gave no right of appeal by individuals to the Privy Council. Mr. Peto then asked the Minister of Health whether he was aware that the subject of manipulative surgery, with one or two exceptions, was not taught in British medical schools; whether he would take steps to point out the advisability of rectifying this omission to the General Medical Council and other responsible bodies; and whether, in the event of a refusal by those bodies to recognize the value of these therapeutic measures, he would take action to insist upon this subject being given adequate prominence in the medical curriculum. Mr. Chamberlain replied that the revised medical curriculum adopted by the General Medical Council in 1922, which came into force on January 1st, 1923, included practical instruction in surgical methods such as massage and manipulative surgery, in orthopaedics and in electro-therapeutics and mechano-therapeutics. The question of representations to the General Medical Council or of the other action suggested in the question did not therefore appear to arise. Mr. Peto asked whether persons skilled in manipulative surgery had not to be qualified surgeons under the Medical Act before they were allowed to give the instruction under the revised curriculum. Mr. Chamberlain asked for notice of this. Dr. Watts asked whether Mr. Chamberlain was aware that manipulative surgery was pure humbug. No answer was returned.

X Rays for Insurance Patients.—In reply to questions as to the provision of facilities for *x*-ray examination as one of the benefits under the National Health Insurance Act, the Minister of Health said that payment for an *x*-ray examination could at present be made under the National Health Insurance Act only where the examination was incidental to a service, such as dental or hospital treatment, made available under an approved society's scheme of additional benefits. The Royal Commission on Health Insurance was now considering the extension or development of benefits under the Health Insurance Act, and the suggestion made by Mr. Peto would be forwarded to the Commission. Mr. Neville Chamberlain also announced that he was referring to the Royal Commission on Health Insurance, for consideration, the question of granting exemption from health insurance payments of those workers already covered by payment to superannuation and provident funds as a condition of their employment.

Vaccination of Workhouse Inmates.—In reply to a question as to the vaccination of inmates of Chesterfield Workhouse, as to several deaths reported to have been accelerated if not so caused, and as to an inquiry to be held by the guardians, Sir Kingsley Wood said the Minister of Health was informed that, on the occurrence of a case of small-pox in a ward occupied by elderly females, 379 of the inmates of the institution, including elderly

persons, were offered and accepted vaccination. Forty-eight of the inmates were not vaccinated, either because this was thought to be undesirable on account of their state of health or because they declined. Since the vaccination was carried out there had been no death in the institution which could be attributed to, or was accelerated by, vaccination. The vaccinations were carried out on the advice of the medical officer of health of the borough, acting within his routine and prescribed duties. The Minister did not think it was necessary for an inspector of the Ministry to attend the guardians' inquiry, but he had asked for a report of it.

Magistrates and Objectors to Vaccination.—On May 18th Mr. Groves asked the Home Secretary if his attention had been called to the refusal of certain magistrates to witness statutory declarations under the Vaccination Acts; and if he would follow the precedent of one of his predecessors and circularize all magistrates, calling their attention to their legal obligations to witness statutory declarations when sitting in open court, expressly pointing out to them that they were neither required nor authorized to cross-examine applicants as to the reasons for their objections, but that their conscientious objections were sufficient. Mr. G. Locker-Lampson, Under Secretary to the Home Office, in reply, said that on March 17th Mr. Chamberlain had received a deputation from the National Anti-Vaccination League, which made representations to him on the subject. After carefully considering the particulars submitted by the league, he came to the conclusion that no case had been made out for the issue of a circular to justices.

Cancer.—The Parliamentary Secretary to the Ministry of Health (Sir Kingsley Wood) informed Mr. Groves that the inquiries with regard to cancer which certain local authorities were carrying out on the advice of the Departmental Committee on Cancer had not reached a stage when a definite statement on progress could usefully be made. The Departmental Committee was continuing its investigations, and circulars were issued by the Ministry of Health to local authorities giving information on cancer which might be helpful.

A Lumbar Abscess.—On May 18th Mr. Hardie asked the Minister of Pensions to grant a special medical inquiry into the case of an ex-service man who was suffering from the presence of shrapnel in his body, although at his final appeal in April he was disallowed on the ground of his disability being non-attributable to service. Lieut.-Colonel G. F. Stanley, Parliamentary Secretary to the Ministry of Pensions, replied that the man's claim was in respect of a lumbar abscess, and the decision both of the Ministry and of the appeal tribunal was reached after full consideration of medical evidence obtained from hospitals and otherwise as to the causation of the condition. There was no ground for granting a special medical inquiry. Mr. Hardie asked whether the *x*-ray plate taken at Stobhill Hospital, Springburn, Glasgow, would be produced as evidence whether there were parts of shrapnel in the man's body. Colonel Stanley said that the claim was not in respect of parts of shrapnel in the man's body. An *x*-ray plate was produced before the tribunal, and it was clear from it that the shrapnel had nothing to do with the abscess. All the man had been claiming for was the abscess. The medical board decided that this was not due to the wound he had received. He went to the appeal tribunal, which decided to have a report from the hospital and an *x*-ray photograph in order to make sure that this was not the result of the wound, and they confirmed the decision of the medical board. Mr. Hardie announced that he proposed to raise the subject in the House.

Secret Remedies.—On May 19th Colonel Day asked the Minister of Health whether his attention had been drawn to the dangers arising from the unrestricted sales of certain patent medicines, where the manufacturers were not compelled to state the composition of the products bearing their labels; whether he proposed to take any action in the matter to protect the public further; and if he would introduce legislation to compel all manufacturers of patent medicines to state plainly on the labels of medicines sold the ingredients contained in them. Sir Kingsley Wood replied that the Minister appreciated the importance, in the interest of public health, of securing some statutory regulation of the conditions under which patent medicines were advertised and sold, but in the present state of business he did not anticipate that it would be possible to introduce legislation on this subject during the present session. Colonel Day asked whether Sir Kingsley Wood was aware that many of these patent medicines contained injurious ingredients, and that the public took them a little too freely, not knowing what they contained. Sir Kingsley Wood said that might be so, but the difficulty was to find time for legislation. Mr. W. Thorne asked if Sir Kingsley Wood had ever been in the market places on a Saturday night and listened to the persons who sold these medicines, and seen how easily people could be "chloroformed" in this direction. Sir Kingsley Wood: And in other directions, too.

Opium in Assam.—Earl Winterton, replying, on May 18th, to Mr. Lansbury, said that in 1923-24 the proportion of Assam revenues derived from opium (licence fees and profit on sale proceeds) was about 18 per cent. (gross). The provincial Government had taken steps to reduce consumption; a system of registration had been introduced, and an experiment was being made with rationing. The amount of opium issued had fallen by nearly 50 per cent. in the five years from 1919-20 to 1923-24. The Government of India had recently addressed inquiries to local Governments regarding the high rates of consumption of opium in some areas. The Secretary of State proposed to await the result of these inquiries.

Schools for Physically Defective Children.—In reply to a question by Sir Henry Craik, the Minister of Education said that forty-eight local education authorities had provided schools for physically defective children. Of these schools, 113 were day and 37 residential schools. One day school and 71 residential schools of this type were provided by voluntary bodies. Out of 318 local education authorities only 7 had not provided school clinics for treatment of physically defective children, and 5 of the 7 had submitted proposals. In reply to another question the Minister said that last year 567 blind children, including 287 partially blind, and 4,301 crippled children, other than those suffering from active non-pulmonary tuberculosis, were attending no recognized school or institution. Many of the crippled children did not need to attend special schools, but rather required orthopaedic treatment to enable them to continue in attendance at ordinary public elementary schools, and he was encouraging the development of such treatment. He had already asked all education authorities to give careful attention to special school accommodation for blind and crippled children.

Butter and Margarine.—In answer to a question as to the discontinuance of the supply of butter by the Metropolitan Asylums Board, the Minister of Health said that he was advised that the use of margarine was quite compatible with a good diet, provided that the other constituents of the diet were satisfactory. The dietary adopted by the Metropolitan Asylums Board fulfilled this condition and, further, made adequate provision for adjusting the diet to suit any particular case. He was not prepared to recommend that the allowance of butter be continued irrespective of season. The provision for adjusting the diet to the needs of children was adequate.

"Headache Powders."—In reply to Colonel Day, the Minister of Health said he was informed that antipyrin was an ingredient in certain proprietary headache powders, but he had no information that its use was increasing. As in the case of acetanilide (see JOURNAL, May 16th, p. 944), he doubted whether, pending legislation for the control of secret remedies, the sale of headache powders containing this drug could be effectively restricted.

Infants' Foods.—Mr. Groves, on May 19th, asked the Minister of Health whether he would consider the possible danger to infant life arising from the sale of proprietary infant foods consisting largely of starch, and introduce regulations governing the sale of such foods, in view of the fact that he had issued instructions controlling the sale of dried milks. Sir Kingsley Wood replied that the Minister of Health was sure that misleading claims were sometimes made as to the value of infants' foods, consisting largely of starch, but he was not satisfied, on the information at present before him, that there was sufficient evidence of danger arising to public health to justify the issue of regulations at the present time. Mr. B. Smith asked whether the Minister would circulate through the medical side of the Ministry the names of the firms who largely embodied starch in so-called foods. Sir Kingsley Wood said he did not see the necessity for that. The consumption of these proprietary foods was decreasing. If sufficient evidence of danger was obtained the Minister would take immediate action.

Infectious Hospitals: Poor Law Medical Relief.—The Minister of Health informed Mr. Webb that there are about 1,100 hospitals, with 44,000 beds, in England and Wales for treatment of infectious diseases, including tuberculosis. No information is available as to the total medical and nursing staffs of these hospitals, nor as to the number of patients treated. In 1922-23 the cost to the rates of this service was £3,631,000. In January, 1921, there were 1,129 indoor posts for Poor Law medical officers and 3,538 outdoor posts. Information as to salaries paid was not available. In March, 1924, 17,405 persons were receiving outdoor medical relief.

Public Libraries and Infection.—Answering Mr. Groves, on May 6th, Sir Kingsley Wood said the Minister of Health was advised that medical officers of health were fully alive to whatever danger of infection there might be to frequenters of public libraries through the use of books previously handled by persons suffering from infectious ailments. Section 59 of the Public Health Acts Amendment Act, 1907, made special provision for precautions to prevent the spread of infection through the use of library books, and that section could be put into force in any district on the application of the local authority. The Minister of Health did not consider it necessary to undertake any special investigation or to issue periodical instructions to local authorities on the matter.

Notes in Brief.

No State has yet ratified the agreement concluded by the first Opium Conference at Geneva. The British Government hopes to do so soon, but has first to consult certain Protectorates. The Convention concluded by the second Opium Conference remains open for signature till September 30th, and cannot be ratified before then.

The British Government is unable at present to ratify the International Convention on night baking.

Since December 31st 21 outbreaks of foot-and-mouth disease have occurred in Great Britain.

In 1924-25 health insurance benefits equal to 12s. a head were distributed in England and Wales, in addition to 6s. 8½d. a head for domiciliary Poor Law relief and 11s. 5½d. a head for old age pensions.

Attendances of children at school clinics or for other medical treatment rank as school attendances if made under approved arrangements.

Last year 528 children in the West Riding of Yorkshire were ascertained to be mentally defective within the meaning of the Education Act, 1921.

It is estimated that 421,000 boys and 416,000 girls reached the age of 16 during the year 1924.

The Minister of Education has refused to send out a recommendation that every medically fit child should be taught swimming.

The second reading of the Nursing Homes (Registration) Bill has been set down for June 19th, and the second reading of the Therapeutic Substances Bill for May 25th.

The India Office has received a report from the Government of India to the effect that no cruelty attaches to the export of monkeys from Bombay for medical or surgical purposes, and that no religious offence has as yet been given by the capture of the animals.

The Board of Education has made no conditions or regulations for the supply of ambulances serving the needs of schools for physically or mentally defective children.

Correspondence.

VOMITING IN INFANCY.

SIR,—I have read with very great pleasure and profit Dr. Cameron's Lumleian Lectures on some forms of vomiting in infancy, but I would venture to suggest that some of his remarks on hypertrophic pyloric stenosis are open to criticism. Dr. Cameron's thesis is that the cause of hypertrophic pyloric stenosis and pyloric spasm is an achalasia of the pyloric ring sphincter. He points out that in pyloric stenosis the hypertrophy involves a great deal more than the true pylorus—that is, the pyloric ring sphincter; indeed, he produces considerable evidence that the latter is not hypertrophied at all, and draws the deduction that the hypertrophy is the result of an endeavour to pass the contents of the stomach past the obstruction caused by the failure of the pyloric ring muscle to dilate.

The fact that hypertrophy is not limited to the ring sphincter is obvious and generally accepted. Thus Cunningham, in the paper quoted by Dr. Cameron, says: "In this disorder the whole length of the canal is involved." The word "pylorus" is used in these cases as a synonym for pyloric canal, which is unfortunate, because it only adds to the confusion that already surrounds the terminology of the pyloric portion of the stomach. The pyloric canal was labelled by His the "pyloric antrum," whereas, according to the B.N.A. nomenclature, the pyloric antrum includes the pyloric canal and the vestibule. Discussion would be simplified if, as suggested by Cunningham, the term "antrum" were discarded and Jonnesco's terms of "pyloric canal" and "pyloric vestibule" were used, and this terminology I use in this letter.

The circular musculature of the pyloric canal in infants is relatively thicker than in adults and the lumen always approximates to a canal in shape. In the foetus the pyloric canal is even more a canal than in the infant; the pyloric ring sphincter does not function as a valve, but closure occurs by the contraction of the circular musculature of the pyloric canal. In hypertrophic pyloric stenosis the whole circular musculature of the pyloric canal is hypertrophied and acts as a sphincter in a manner similar to that of the pyloric canal of the foetus; so similar, indeed, is it that Dent may well be forgiven if, in Dr. Cameron's words, "he may have mistaken the rigid and tightly contracted pyloric cylinder . . . normal in the foetus for the pathological condition with which he was familiar." The essential factor in pyloric stenosis is the condition of the circular coat of the pyloric canal, and not the condition of the ring sphincter, whereas in pylorospasm the converse is the case.

Dr. Cameron also maintains that "there is no true stenosis present." If by "no true stenosis" he means that there is not complete stenosis, I agree; but I submit there is clinical evidence in favour of the existence of a relative stenosis, which is converted into a complete one by spasm or abnormal growth of the circular musculature of the pyloric canal imprisoning the mucous membrane, or by swelling of the mucous membrane, or by a combination of these factors. Sauer has recently produced anatomical evidence of this relative stenosis. He made, by the reconstructive method, wax models of the pylori of two infants of the same sex, approximately the same birth weight, and practically the same age at the time of death, and found that the lumen of the pyloric canal in the stenosis case was the same at the stomach end, was larger at the duodenal end, but narrower in the middle, than the canal in the normal child.

Whether the state of the pyloric ring sphincter in pyloric stenosis be that of achalasia or spasm is not, I think, of great importance if it be remembered that the essential thing is the condition of the circular musculature of the pyloric canal. For myself, I believe that it is spasm and not achalasia, for if the condition were one of achalasia I cannot understand the beneficial effects of stomach washouts, the relaxation of the pylorus shortly before death in some cases, as evidenced by the occurrence of terminal diarrhoea and by *x*-ray examination, and the inability of pressure over the stomach or sodium bicarbonate to force the passage of the pylorus.

In Dr. Cameron's view it is a mistake to regard pyloric stenosis as congenital in origin, and he cites as evidence against the congenital origin the fact that many cases do not show symptoms until from two to four weeks after birth. I have already suggested an explanation of the late onset of the symptoms, but I think that sometimes too much is made of this point; thus, out of 448 cases collected by Sauer, in 103 and 125 cases respectively the onset of vomiting occurred in the second and third weeks, but in 105 cases the onset of vomiting occurred in the first week; and instances in which a history of vomiting since birth is obtained are surely not unknown in the experience of those physicians who see a large number of these cases. Now any theory which explains the disease must explain all cases, even those which show symptoms directly after birth. I would like to ask Dr. Cameron how, on his thesis, he explains the great degree of hypertrophy which he must have met with in cases which were operated on when three weeks old. I cannot imagine such a degree of hypertrophy developing in so short a space of time if the condition be a post-natal one, and I would also submit that additional evidence in favour of a congenital origin is found in the similarity of the hypertrophic pylorus to the foetal pylorus which I have already mentioned, and also in Professor J. C. Brash's investigations into the development of the musculature of the pylorus, which are recorded in my Goulstonian Lectures (1923).

Of one of the *x*-ray photographs illustrating the lecture the lecturer says: "I believe that in this photograph, which has caught the contractile cylinder in a phase of relaxation, we have outlined the enormous lumen which, after death, is completely obliterated." Surely there is some mistake here, since the only part of the stomach the lumen of which is completely obliterated after death is the hypertrophied pylorus (pyloric canal), and I cannot think that Dr. Cameron would suggest that the pyloric canal can ever dilate to this degree. If such dilatation did in fact ever occur it surely would have been observed at operation. Earlier in this lecture the contractile cylinder is defined as consisting of "pyloric antrum" and "vestibule"; if in the above quotation by "contractile cylinder" is meant the pyloric vestibule only, then I maintain that after death the lumen is not obliterated. The explanation of the photograph is, I submit, a perfectly simple one—the radiograph has just caught a peristaltic wave, and if a later photograph had been taken the wave of contraction would have been seen to have moved nearer to the pylorus. My colleague Dr. Teall, in his radiographic examination of these cases, has repeatedly observed this sequence of events. I may also remark that peristalsis in pyloric stenosis is not limited to the contractile cylinder, but waves appear well up on the cardia; if it were not so, how otherwise would the appearance of obvious peristaltic waves commencing at the left subcostal margin and ending in the right flank be explained?

If this letter were not already far too long, I would like to have challenged the view that there is no fundamental distinction between pyloric stenosis and pyloric spasm. I cannot, however, finish without once more expressing my thanks to Dr. Cameron for his lectures and my high appreciation of them.—I am, etc.,

Birmingham, May 14th. LEONARD G. PARSONS.

SLOW AND IRREGULAR HEART.

SIR,—It may reassure sufferers from slow heart, arrhythmia, extra-systoles, and other cardiac irregularities to hear of my personal experience of these during a long life.

I had an irregular pulse from childhood, and first noticed it at the age of 10. My pulse has always been slow—50 to 60 during rest. At the age of 14 extra-systoles began, and these have gradually increased in frequency until, in latter years, they have often caused great annoyance. At 40 I began to be troubled with paroxysms of auricular fibrillation, usually lasting eight hours or more. After enduring this condition for twenty-eight years I discovered incidentally that calcium lactate in small doses (15 grains daily at bedtime) was a successful remedy. This has kept me free from paroxysms for three years, though it has little effect, if any, on the extra-systoles. I have led an active life in body and mind, avoiding athletics and other artificial exercise, which I have always found to be a painful substitute for work; and now at the age of 71 I am still active, and am usually taken to be ten years younger.

My father suffered in a similar way, but died from other causes in his 76th year. Three relatives were affected with what seems to have been the same trouble; they were treated with digitalis and strychnine, and died before reaching my age. Digitalis, strophanthus, and strychnine have increased my trouble when tried. I found the best palliative for paroxysms of auricular fibrillation to be a large dose of chloral and potassium bromide.

I shall be glad to answer privately any letter forwarded to me; but in these columns I prefer to take cover behind the pseudonym of—

May 17th. ARRHYTHMIA.

RELAPSE IN MEASLES.

SIR,—I was greatly interested in the letter on relapse in measles, by Sir J. W. Moore, in the BRITISH MEDICAL JOURNAL of May 16th (p. 946). I recently saw a case of this kind whilst acting as locumtenent in a general practice in Yorkshire.

A girl, 9 years of age, had an attack of measles which ran its usual course, the rash completely fading away, the temperature dropping to normal, and the other symptoms subsiding; I had told the parents that she might get up in two or three days. On the day she was to get up I was called to the house again, and found that the temperature had again risen, the symptoms were returning, and the rash was again making its appearance. The rash developed in the usual way, the other symptoms subsided, and the child made a rapid recovery.

The attacks seemed to be exactly similar, the only difference I noticed being the fact that during the second attack the spots were more profuse on the body and limbs, whereas during the first attack they predominated on the face.—I am, etc.,

Manchester, May 17th. FRANK E. EDWARDS.

SIR,—Might there not be the same fundamental cause for relapse in measles as for relapse in vaccination? I vaccinated W. A. B. on April 17th, 1925, in four places on the arm, all of which reacted satisfactorily. After apparently complete recovery, recurrence of the pock occurred in one place on May 15th, a very rare event, as stated by the late Sir William Osler. The relapse in measles generally occurs about the end of the second week, and this case of relapse in vaccinia occurred at a similar time, which is suggestive of a common underlying cause in the two conditions.—I am, etc.,

JOHN N. BEADLES, M.B., B.S.Lond.

London, S.W.16, May 16th.

BACTERIAL VACCINES.

SIR,—I have now had the opportunity of consulting the two publications referred to by Professor Mackie in his letter (written on behalf of Dr. S. Davidson) which appeared in your issue of April 18th (p. 762).

As a result I have to confess that I by no means share his view in the general interpretation of the very limited experiment referred to, which deals entirely with pneumococcus Type I. In the abstract of the earlier paper (BRITISH MEDICAL JOURNAL, December 27th, 1924, p. 1200) it is stated that of the animals prepared by various types of vaccine treatment those remaining in relatively good health showed the least resistance, and those with toxic symptoms were proved to have a serum of high protective immunity.

We are thus brought back in general terms to the conception which all novitiates in bacteriology were taught to imbibe some twenty-five years since, to the effect that active specific immunity was only to be acquired as the result of physical suffering.

Disregard is paid to modern conceptions—the outcome of extensive research—that physical suffering may be entirely eliminated in the process of active immunization either with bacterial substances or with their products, as with scarlet fever and diphtheria. Ramon, Glenny, and others have shown the great antigenic value of diphtheria toxin deliberately rendered inert according to animal tests for toxicity. In connexion with tetanus and the ordinary gas-gangrene-producing organisms there is the significant work of Glenny, Buxton, and others, who, in a recent publication,[1] arrive at the terse conclusion, "Both specific toxin and toxoid are antigenic."

Recent statistics show that in France—an important animal-industry country—from one-third to one-half of the total of veterinary practitioners are employing various forms of detoxicated vaccines in the treatment of bacterial infection, so that Ramon's work on anatoxins is having a wide repercussion.

Dr. Davidson's account of his experiments with the pneumococcus upon mice and rabbits displays certain technical errors.

1. The weights of the animals employed have been disregarded and the minimal lethal dose for mice of the broth culture employed is higher than that stated; far too few animals have been used for each test.

2. It is difficult to make comparison of the quantities of the several vaccines employed in the attempts at immunization, some of these vaccines being measured gravimetrically and others volumetrically, whilst the detoxicated vaccine is measured by the number of organisms.

3. With regard to the immunization of rabbits with the detoxicated vaccine it is stated that a total of 38,000 thousand millions was given intravenously to each animal, whilst those treated subcutaneously each received 88,000 thousand millions. (*Sic.*) Figures of such astronomical dimensions are somewhat beyond my comprehension, but a simple arithmetical calculation shows that if this statement be correct, each of these rabbits received a total of 770 c.cm. intravenously—the last dose being 400 c.cm.; also each rabbit treated subcutaneously received a total of 1,760 c.cm.—the final dose in these cases being 1,000 c.cm.! (Such heroic dosage seems to be rather within the limits of physical endurance of a horse of 17 hands.)

Table V (p. 77) epitomizes the results of the attempts to immunize six rabbits with the several vaccines, there being administered subsequently to each animal and also to one untreated control animal 1 c.cm. of a broth culture of pneumococcus Type I. There are, in effect, seven different experiments with only one animal per experiment. Only two animals survived the test—namely, the rabbit previously prepared with a heat-killed broth culture and also the rabbit prepared with defatted vaccine. Yet the author formulates a "general conclusion," and states:

"As judged by I. Production of antibodies, II. Protection to lethal doses of micro-organisms, detoxicated and defatted vaccines have no immunological value comparable to that of ordinary heat-killed vaccines."

Such evidence as is adduced by the author is not only of the scantiest nature possible; it is incredible in material places and is opposed to the author's own finding.

I find that at the discussion which ensued subsequent to the reading of Dr. Davidson's paper, Professor Mackie makes the statement, "The results have been exceedingly decisive and do not admit of any serious criticism," and I therefore feel impelled to submit this analysis.—I am, etc.,

Hendon, N.W.4, May 16th. MYER COPLANS.

[1] *Journ. Path.*, vol. xxviii, p. 279.

CLEAN MILK.

SIR,—I notice that Dr. Chalmers Watson has been drawing attention to the fact that very few hospitals or local authorities go in for Grade A milk, and that none of the leading general hospitals or children's hospitals in Scotland have yet given this subject serious consideration.

The City of Leicester Isolation Hospital and Sanatorium have been using Grade A tuberculin-tested milk for all patients and resident staff since May, 1923, a period of two years. As we have 340 beds for patients, including infectious diseases and cases of tuberculosis (both pulmonary and non-pulmonary, adults and children in all stages), and a resident staff of 88, our average milk consumption is 50 gallons a day.

Our milk supply is tested both bacteriologically and qualitatively by us after delivery here, once a week in summer and twice a month in winter on an average, in order to ascertain if it is up to standard. We have been quite satisfied with the milk since we commenced taking it two years ago.—I am, etc.,

F. A. E. SILCOCK, M.B., D.P.H.,
Medical Superintendent, Leicester Isolation Hospital and Sanatorium.

May 18th.

SIR,—In a letter just received from Dr. McMichael, M.O.H. Paisley, I am informed that, following on a recent decision of the town council, only certified milk is now supplied to all the patients in the three municipal hospitals in Paisley—the Fever Hospital, the Tuberculosis Hospital, and the Maternity and Child Welfare Hospital. So far as I am aware, Paisley has therefore the distinction of taking the lead in establishing a much needed reform. Reference may also appropriately be made to the model dairy established by Sir R. Philip some years ago for the supply of clean milk to the Tuberculosis Hospital, as part of the general Edinburgh scheme for combating the disease, to the individual pioneer work (in Scotland) of Dr. Calder of Stow as a producer of certified milk on a commercial scale, and to the recent action of the county council of East Lothian in securing clean milk for its sanatorium.

For many years past a considerable amount of valuable work has been done on the subject of milk, notably at the National Institute for Research in Dairying, Reading, under the direction of Dr. Williams. This work, however, has largely remained outside the field of interest of the medical profession as a whole. It would appear that the time is now ripe for medical men to interest themselves in the question in a more intensive way than has so far prevailed. It is probably no exaggeration to say that, viewed from the necessary broad standpoint, there is no more pressing or vitally important question at the present time than the adequate provision throughout the country of a clean milk supply.—I am, etc.,

CHALMERS WATSON, M.D.

Edinburgh, May 17th.

SEVERE DERMATITIS FOLLOWING ULTRA-VIOLET LIGHT.

SIR,—It would be useful if Drs. MacCormac and McCrea would state the type of lamp used in the case of severe dermatitis following ultra-violet light recorded by them in the JOURNAL of April 11th (p. 693), and would mention the voltage, the distance of the patient from the lamp, and whether it was possible for him to turn over in his sleep. I have seen several cases of severe dermatitis due to ultra-violet irradiation, but the lesion has always been limited to the part exposed. Moreover, none of these "bad sunburns," although often producing large blisters, have become septic. After blistering the serum exuded from the blister, which then collapsed, and the dead cuticle peeled off. A raw surface was left which quickly healed without pus formation. I have used the rays to treat ordinary heat burns, and these almost invariably healed much quicker than is usual with any other method of treatment.

I think that a patient exposed to any modern source of ultra-violet rays for seventy minutes would suffer from a severe dermatitis unless his skin had been well pigmented by previous treatment. Undoubtedly all ultra-violet treatment should be supervised by a medical man.

As to the comparative merits of the carbon arc lamp and the newer sources of ultra-violet rays, it is too big a subject to touch on in this letter.—I am, etc.,

CLYDE MCKENZIE, M.B.

Smethwick, May 4th.

X-RAY DIAGNOSIS.

SIR,—The above term is creeping into medical language, and since it is bound to convey a wrong impression its use is unfortunate. The function of the radiologist is to report findings, and the report is one piece of evidence in a case upon which the clinician pronounces final judgement. In a court of law the judge sums up on the evidence given. Certain evidence may stand out above all else in importance, and so it is with radiological evidence. It is often the most convincing of the observations made, but this does not justify the term "*x*-ray diagnosis." A radiologist, if he be wise, does not attempt to make a diagnosis. He may on occasion suggest a pathological condition consistent with the *x*-ray appearances.

The correct diagnosis of a case rests upon the history, symptoms, and signs, and the last word is more often given by the latter. One was taught as a student that the first of the senses to be made use of in approaching a case is that of sight. Our sense of sight is limited in a very definite degree to the surface, but it can be extended to observations below the surface by bringing to our aid light of a different wave-length—namely, *x* rays—and translating the effect by photographic and other means into pictures possible of comprehension by means of human vision. Surely, then, one has not properly exhausted the first step in an examination until radiological evidence has been taken.

It cannot be said that diagnosis is easy, or that correct diagnosis is as common as we should like. Yet correct diagnosis is the very first step towards correct treatment. It is astonishing, then, to hear clinicians attempting to belittle the value of radiological examination. Assistance in any form towards the end in view—namely, the correct interpretation of a case—ought to be welcomed. The practice of underestimating and mistrusting *x*-ray evidence, at one time so common, is not so now, yet it is too prevalent. The cause of this is no doubt largely due to the fact that the clinician has been let down on occasions by reports based on wrong deductions. One so commonly hears the remark made that radiograms are deceptive, whereas it is the interpretation that is at fault. So long as the profession imagines that an *x*-ray examination merely consists in taking a photograph, misinterpretation is bound to occur.—I am, etc.,

C. GUY WHORLOW.

Hove, May 7th.

Obituary.

HOWARD H. TOOTH, C.B., C.M.G., M.D., F.R.C.P.,

Consulting Physician to St. Bartholomew's Hospital and the National Hospital for the Paralysed and Epileptic.

VERY many readers will have seen with deep regret the brief announcement in our last issue of the death of Dr. Howard Tooth, the distinguished neurological physician, which occurred on May 13th after a long illness.

Howard Henry Tooth was a son of the late Frederick Tooth of Hove, Sussex. He was born on April 22nd, 1856, and was educated at Rugby and St. John's College, Cambridge, where he took the B.A. degree in 1877 and the M.A. in 1881. From Cambridge he went to St. Bartholomew's Hospital, obtained the M.R.C.S. and L.R.C.P. diplomas in 1880, and the M.R.C.P. in 1881, and graduated M.B. in the following year. He proceeded M.D. in 1885, choosing as the subject of his thesis the peroneal type of muscular atrophy. He was elected F.R.C.P. in 1888, and again chose a neurological topic—secondary degeneration of the spinal cord—for his Goulstonian Lectures delivered before the College in 1889; they were published in successive issues of the BRITISH MEDICAL JOURNAL during April of that year. He was elected assistant physician to the

Metropolitan Hospital in 1881; to the Hospital for the Paralysed and Epileptic, Queen Square, at the end of 1887; and to St. Bartholomew's Hospital in 1895. On retiring from the active staff of each institution he was elected consulting physician.

During the South African war Dr. Tooth served as physician to the Portland Hospital, and was created C.M.G. in 1901. Later, under Lord Haldane's scheme for the Territorial Force, he was given the command of the Medical Unit, Officers' Training Corps, University of London Contingent, and this experience led to his appointment during the early part of the great war as officer commanding the 1st London Territorial General Hospital, which was staffed by his colleagues of St. Bartholomew's. In 1916 he became consulting physician to the troops in Malta, with the temporary rank of colonel A.M.S., and during the last year of the war he was consultant to the British Forces in Italy. He was twice mentioned in dispatches, and was created C.B. in 1918. Like his friend and colleague Sir Archibald Garrod, he received from the University of Malta the honorary degree of M.D.

Dr. Tooth was for many years examiner in medicine to the Universities of Cambridge and Durham. He was censor of the Royal College of Physicians in 1913-14, and had held office as President of the Neurological Section and Vice-President of the Medical Section of the Royal Society of Medicine. His presidential address to the former section on the "Growth and survival period of intercranial tumours" was published in *Brain* in 1912, and in the following year he contributed a paper on the treatment of cerebral tumours to the International Medical Congress held in London.

Old St. Bartholomew's men in every part of the world, and students from other schools who knew him at Queen Square, have affectionate memories of Dr. Howard Tooth in the wards and out-patient rooms. His teaching was practical, and given usually in the form of a quiet talk between colleagues of equal standing. Handsome, courteous, and upright in bearing, with kindly smile and sympathetic voice, Dr. Tooth won the hearts of all about him.

Dr. Tooth was twice married. His first wife, a daughter of Edward Price, died in 1905; his second wife is a daughter of the Rev. C. S. Chilver. He leaves one son and two daughters.

We are indebted to Dr. H. MORLEY FLETCHER, senior physician to St. Bartholomew's Hospital, for the following tribute:

By the death of Howard Tooth his former colleagues have lost one who had a high place in their affection and esteem. He had to an unusual degree a bright and sunny temperament which endeared him to all, and this was combined with a most transparent honesty of character to which the faintest touch of chicanery was abhorrent. During the many years I had the privilege of knowing him I do not think I ever heard him make a disparaging remark about anyone.

As a neurologist his advice was sought for by his colleagues, and he would spare neither time nor trouble to help in a difficult case. His name is particularly associated with the peroneal type of muscular atrophy, but in more recent years—1912 and 1913—he did valuable work with regard to cerebral tumours.

He had many interests outside his profession: he was devoted to music, and during his residence in London played regularly in orchestra. He was a first-class mechanic, and many of his happiest hours were spent in his well equipped workshop. Later in life he became an ardent gardener, and up to his last illness work in his garden absorbed much of his leisure.

During the war he was one of the staff of No. 1 London General Hospital, and became the officer commanding until he was sent out as consulting physician to the forces at Malta. All who served under him at No. 1 Hospital can recall the pleasant way he had of dealing with the difficulties, both small and great, which are constantly liable to occur during war service, and how much we missed him when he was seconded for foreign service. His sunny presence will be missed by all who knew him. We offer our most sincere sympathy to his widow and children.

Medico-Legal.

LUNACY LAW AND ADMINISTRATION.

HARNETT *v.* BOND AND ADAM.

THE House of Lords, consisting of the Lord Chancellor and Lords Dunedin, Atkinson, Sumner, and Buckmaster, delivered judgement in the case Harnett *v.* Bond and Adam in the House of Lords on May 15th.

Previous proceedings have been reported in the BRITISH MEDICAL JOURNAL—in the King's Bench Division, March 8th, 1924, at pp. 449 et seq.; and in the Court of Appeal, April 12th, 1924, at pp. 692 et seq.

The plaintiff, Mr. William Smart Harnett, a farmer of Sittingbourne, Kent, having been detained as a lunatic at Malling Place, Kent, a home for the reception of lunatics of which Dr. Adam was the manager, under a reception order dated November 10th, 1912, made in accordance with Section 4 of the Lunacy Act, 1890, left the home on December 12th, 1912, on a leave of absence on trial order for twenty-eight days. This order, the form of which was settled by the Law Officers of the Crown, pursuant to Section 55 of the Lunacy Act, 1890, purported to empower the medical officer to take back the plaintiff at any time during the twenty-eight days if his mental condition required it. The plaintiff left the home with his brother, and on December 14th, 1912, he went alone to the offices of the Board of Control in Victoria Street, London, to ask if he could be put under the control of the police rather than his brother. Dr. Bond, a Commissioner in Lunacy, saw him, and, after referring to the file of the plaintiff's case, telephoned to Dr. Adam that the plaintiff was in an excited state and in his opinion unfit to be at large, and detained the plaintiff for three hours until the arrival of two attendants, who took the plaintiff back to Malling Place in a motor car. Upon arrival there Dr. Adam examined the plaintiff and detained him under the reception order. Thereafter, the plaintiff was detained in various mental homes until his escape on October 15th, 1921, when prominent alienists whom he consulted certified him sane. The plaintiff then brought an action against Dr. Bond and Dr. Adam, alleging conspiracy, assault, and false imprisonment, jointly and severally.

The case was tried before Mr. Justice Lush and a special jury, who found that the plaintiff was sane on December 14th, 1912; that Dr. Bond caused his detention at Victoria Street until the attendants arrived; that he did so for the purpose of his being detained at Malling Place; that Dr. Bond did not honestly believe that the plaintiff was of unsound mind, or was unfit to be at large, or was dangerous to himself or others, but that he did believe that the plaintiff had escaped from his brother's charge, and that was the reason he sent him back; that Dr. Adam honestly believed the plaintiff was of unsound mind and unfit to be at large on December 14th, but that he did not take reasonable care in taking the plaintiff back. Mr. Justice Lush directed the jury that in assessing damages they might take into consideration the whole period of the plaintiff's detention up to October 15th, 1921, if they thought it was the direct consequence of the acts of defendants on December 14th, 1912.

The jury awarded £20,000 damages against Dr. Bond and Dr. Adam jointly, and £5,000 against Dr. Bond for the detention at the offices for which he was alone responsible.

In the Court of Appeal (1924, 2 K.B. 517), Bankes, Warrington, and Scrutton, L.JJ., held that this was a misdirection, for, even if the original detention was unlawful, it was not the direct cause of the plaintiff's subsequent detention, the act of retaking, his recertification on reception at Croydon Mental Hospital on February 25th, 1913, and other certificates of doctors and reports of visitors, each constituting a *novus actus interveniens* breaking the chain of causation. They held, further, that the form of the leave of absence order was warranted by Section 55, Subsection 3 (*b*) of the Lunacy Act, 1890, and that this order and the original reception order justified the manager in taking back the plaintiff and detaining him; also that the manager was protected by Section 330 of the Act of 1890, as he acted in good faith and there was no evidence upon which the jury could have arrived at their answer that he did not exercise reasonable care. A new trial was ordered against Dr. Bond for the detention at the offices, and judgement was entered for Dr. Adam.

This decision of the Court of Appeal was affirmed by the House of Lords, who further held that the manager was empowered by the leave of absence order to retake a patient on leave wherever he might be found; that the onus was on the plaintiff to prove that the manager had not used reasonable care in exercising this power; that if such power were exercised negligently then the remedy (if any) would be by an action for negligence and not by an action for false imprisonment.

The Lord Chancellor's Judgement.

The following is the text of the judgement delivered in the House of Lords, on May 15th, by the Lord Chancellor (Viscount Cave):

This is an appeal by the plaintiff in the action against orders of the Court of Appeal in England reversing a judgement of Mr. Justice Lush in his favour for £5,000 against the defendant Bond, and for £20,000 against the defendants Bond and Adam jointly, and ordering a new trial of the action as against the defendant

Bond and judgement to be entered in favour of the defendant Adam.

The appellant, Mr. William Smart Harnett, was, on November 10th, 1912, received by the defendant, Dr. George Henry Adam, as a private patient in a house licensed for the reception of lunatics and known as Malling Place, West Malling, in the county of Kent. The reception order was made on the petition of the appellant's brother, and it was not disputed on this appeal that at the date when the reception order was made the appellant was of unsound mind. After the reception of the appellant at Malling Place his mental health improved, and on December 12th, 1912, Dr. Adam thought it safe to permit him to be absent upon trial for a period under Section 55 (3) of the Lunacy Act, 1890. The consent required by the section was signed by two of the Visiting Justices for Kent, and was in the following form, which is said to have been approved by the Law Officers of the Crown:

"We, the undersigned, being two of the Visiting Justices of Private Asylums for Kent, hereby sanction leave of absence from Malling Place of William Smart Harnett on probation for the period of twenty-eight days, but this sanction is revocable by us at any time during that period; "Provided that the medical officer shall at any time before the expiration of the said period have power to take back the said patient into the licensed house, if his mental condition requires it."

The appellant accordingly left Malling Place on December 12th with his brother, who had been asked by Dr. Adam to take care of him, but shortly afterwards separated from his brother and went to his home at Sittingbourne. On December 13th he was seen by several persons, who formed varying opinions as to his sanity, and on that afternoon he went on to London and stayed at an hotel near Moorgate Street. On the morning of December 14th he called at the offices of the Commissioners in Lunacy in Victoria Street, taking with him £30 in a bag, and asked to see a Commissioner. The purpose of the appellant in making this call is not very clear; but it would appear from his evidence, and from a letter which he had written to the Commissioners on the preceding day, that he wished the Commissioners to hand him over to the care of the police, and took with him the £30 as payment or security for that purpose. The appellant had interviews with Mr. Dickinson, Secretary of the Board of Control, and with the respondent, Dr. Bond, who was the Commissioner in attendance at the offices on that day; and they both formed an unfavourable opinion as to his mental state, and, after consulting the file relating to his case, communicated with Dr. Adam on the telephone. Whether this telephone message was actually given by Dr. Bond or by Mr. Dickinson at his request, and what were the precise terms of the message, is left in some doubt; and this is by no means surprising, as the evidence relating to this conversation was given more than eleven years after it took place. But it appears clearly from the evidence given by Dr. Bond and Mr. Dickinson, as well as from that of Dr. Adam, that Dr. Adam was informed that the appellant was at the offices of the Commissioners, and was in a very excited state and unfit to be about by himself, and that Dr. Adam replied that he would send a car and two attendants for him. It was suggested on behalf of the appellant that the message was sent before Dr. Bond had personally interviewed the appellant, but I do not think that this was established; and in any case it is proved that Dr. Bond had a long conversation with the appellant before the car arrived and formed a clear opinion that he was unfit to be at large. Pending the arrival of the car, Dr. Bond caused the appellant to be detained (without the use of any violence) in a room at the offices; and on the arrival of the car the two attendants were taken to the room where the appellant was and took him back with them to Malling Place, where he arrived at about 5 o'clock in the afternoon. On the same evening, at about 7 o'clock, he was seen by Dr. Adam, who formed the opinion that he was much worse mentally than when he had been released on trial, and accordingly detained him under the reception order of November.

The appellant was confined at Malling Place until February 22nd, 1913, when he was removed to the Croydon Mental Hospital; and on February 25th, 1913, he was examined by the medical superintendent of that asylum and certified to be suffering from mania. Similar examinations and reports were made by the medical superintendent on March 25th, 1913, October 12th, 1913, and subsequent dates. On August 24th, 1917, the appellant was removed to the Holloway Sanatorium at Virginia Water, and he was again removed on April 30th, 1918, to St. Ann's, Canford Cliffs, and on April 29th, 1920, to Aylsham as a single patient, and at each of these places the reports and certificates required by statute for his continued detention were duly made and given. He was also, as the Act required, frequently seen by the Commissioners and the Visiting Justices, as well as by a Chancery Visitor; and to all these persons he appeared to be still of unsound mind and a proper person to be detained under care and treatment. On October 15th, 1921, the appellant escaped from the house at Aylsham; and, having remained at large for upwards of fourteen days, he could not be retaken under Section 85 of the Act, and remained at liberty. Shortly afterwards he was examined by two eminent medical practitioners having experience in mental cases, and they declared him to be of sound mind.

On May 31st, 1922, the appellant commenced these proceedings against Dr. Bond and Dr. Adam, and by his statement of claim charged them with conspiring together to cause him to be detained at the Commissioners' offices on December 14th, 1912, and afterwards at Malling Place, and also with assault and false imprisonment, and claimed damages against both and each of them. No charge of negligence on the part of Dr. Adam was made in the statement of claim, but Dr. Adam in his defence pleaded that he had acted in good faith and with reasonable care, and relied on Section 330 of the Lunacy Act.

The action was heard by Lush J. and a special jury; and after a long hearing the learned judge summed up the case and put to the jury seventeen questions, which were answered as follows:

1. Did Dr. Bond cause the plaintiff to be detained at the offices until the attendants came for him?—Yes.
2. Did he cause him to be sent back for the purpose only of his being examined by Dr. Adam, or for the purpose of his being detained at Malling Place?—Being detained at Malling Place.
3. Did Dr. Bond cause the plaintiff to be taken back?—Yes.
4. Was the plaintiff of unsound mind on December 14th, 1912?—No.
5. Was he fit to be at large?—Yes.
6. Was he dangerous to himself or others?—No.
7. Did Dr. Bond honestly believe that the plaintiff was of unsound mind?—No.
8. Or that he was not fit to be at large?—No.
9. Or that he was dangerous to himself or others?—No.
10. Did he believe that the plaintiff had escaped from his brother's charge? If so, was that his reason for having him sent back?—Yes.
11. Did he take reasonable care to ascertain the true facts?—No.
12. Did he honestly believe that Dr. Adam had retained a power of taking the plaintiff back during the twenty-eight days in the leave of absence order?—Yes.
13. Did Dr. Adam, when he received the telephone message and sent the car, honestly believe that the plaintiff on December 14th, was of unsound mind and unfit to be at large?—Yes.
14. That it was in his interest that he should be taken back to Malling Place?—Yes.
15. Did he take reasonable care in acting as he did?—No.
16. Did he make it known to the plaintiff that he was liable to be retaken if his mental condition required it?—No.
17. Was the detention of the plaintiff at the Commissioners' offices the act of Dr. Bond alone or was it really the act of both the defendants?—Dr. Bond.

It is common ground that the answer to question 10 was explanatory of the answers to questions 7, 8, and 9, the effect of the four answers being that Dr. Bond acted for the reason given in question 10 and not because of any belief, honest or otherwise, concerning the appellant's frame of mind. These answers having been given, the learned judge proceeded to address the jury upon the question of damages upon the footing that the confinement of the appellant during the whole period from his return to Malling Place until his escape from Aylsham was a direct consequence of the acts done by the defendants on December 14th, 1912; but being apparently uncertain on this point, and as to the joint liability of the defendants, he requested the jury to make alternative assessments in manner appearing in the following further questions and answers:

18. Damages against the defendants?—£25,000.
(*a*) Apportion the sum of £25,000.—Bond £17,500; Adam £7,500.
(*b*) Assess the damages on the footing that the defendants were only responsible for the detention up to February 22nd, 1913, and apportion it, the special damages being £82.—On this footing the total sum is £10,000: Bond £7,500, Adam £2,500.
(*c*) Assess damages against Dr. Bond merely for detention at the offices, taking into consideration the whole purpose for which he was so detained.—£5,000.
(*d*) Assess damages against Dr. Bond and Dr. Adam jointly on the footing that they knew the plaintiff would be deprived of the remainder of his twenty-eight days' liberty, and apportion that.—Total sum £9,800: Bond £7,400, Adam £2,400.

Upon these complicated findings, the learned judge was called upon to pronounce judgement, and, after hearing further arguments, he held that the chain of causation set up by the detention of the appellant at the Commissioners' offices on December 14th, 1912, was not broken, either when Dr. Adam, on examining the patient after his return to Malling Place, formed the opinion that he was then of unsound mind and detained him, or when the appellant was removed to Croydon in 1913, or in November, 1913, when there was a recertification, or at any subsequent removal or certification, and that it was quite open to the jury to treat the long detention as the direct consequence of the wrongful acts of the defendants, and on that footing he gave judgement against Dr. Bond for £5,000 and against both defendants for £20,000 with costs.

The defendants having applied to the Court of Appeal for a new trial, or judgement, that Court (consisting of Bankes, Warrington, and Scrutton, L.JJ.) unanimously set aside the judgement of Lush J., and ordered a new trial as against Dr. Bond and that judgement should be entered for Dr. Adam. As to Dr. Bond, the learned Lord Justices held that the chain of causation had been broken, not only when Dr. Adam decided to detain the appellant after his return to Malling Place, but at "innumerable points" after that date, and that it was plainly not permissible for the jury in assessing damages to treat the whole period of the appellant's captivity as directly caused by the events of December 14th, 1912. As to Dr. Adam, they held that under the terms of the leave of absence order he was entitled to retake the appellant at any time before the end of the twenty-eight days if, in his opinion, honestly formed, it became necessary to do so, and that there was no evidence upon which the jury could find want of reasonable care on his part. From this decision the plaintiff has appealed to this House.

As regards Dr. Bond, I feel no doubt whatever that the Court of Appeal was right in ordering a new trial. It is not disputed that, on the assumption that the findings of the jury as to the appellant's mental condition on December 14th, 1912, were correct, Dr. Bond had no right to cause the appellant to be detained at the offices pending the arrival of Dr. Adam's car, and is liable for damages for that illegal detention. But those damages must, in the authorities, be confined to such as were the direct consequences of the wrong committed, and to hold that the detention of the appellant at the offices for a few hours was the direct cause, not only of his being retaken and conveyed to Malling Place, but also of his being confined in that and other houses until October, 1921, appears to me to be impossible. Dr. Bond could not and did not direct and authorize Dr. Adam to retake the appellant or to confine him at Malling Place; the retaking and confinement were the in-

dependent acts of Dr. Adam, and each of them was a *novus actus interveniens* sufficient to break the chain of causation. Further, the confinement of the appellant could not have continued during nine years without repeated examinations and recertifications by the proper authorities, and for the consequences of those events Dr. Bond cannot on any intelligible principle be held responsible. Whether the direct consequences of Dr. Bond's action in detaining the appellant at the offices ceased when the appellant was handed over to the two attendants and entered the car, or on his arrival at Malling Place, or later on his being examined by Dr. Adam, it is not now necessary to say. That may be a question to be determined at the new trial. But in any case it appears to me that those consequences cannot on any just view of the matter be deemed to have extended beyond 7 o'clock on the evening of December 14th, 1912. It was argued that even on this view of the matter the appellant was entitled to judgement against Dr. Bond for £5,000 as the damages assessed by the jury for detention at the offices, but this finding was obviously coloured by the directions given by the learned trial judge on the question of damages, and by the addition to the question of the words "taking into consideration the whole purpose for which he was so detained," and it appears to me that the whole matter ought to receive fresh consideration at the hands of a jury.

With regard to Dr. Adam, it is remarkable that, whereas he was charged in the pleadings with conspiracy and false imprisonment, no direct question was put to the jury as to either of those charges. The charge of conspiracy was apparently abandoned during the trial, and in any case it was plainly negatived by the findings of the jury in answer to the 13th and 14th questions. The charge of complicity in the false imprisonment at the Commissioners' offices was negatived by the answer to the 17th question, and there was no finding of false imprisonment by Dr. Adam at Malling Place. Why, then, was Dr. Adam held liable in damages at all? It must have been on the ground of the answer of the jury to the 15th question—namely, that Dr. Adam, in acting as he did (that is to say, in sending a car and taking the appellant back to Malling Place), did not act with reasonable care; and yet want of reasonable care was not charged against Dr. Adam in the pleadings, and the issue only arose on his defensive plea, founded on Section 330 of the Act. It appears to me that on this ground alone—namely, the total failure of the plaintiff to establish either of the charges made by him against Dr. Adam—the latter would be entitled to judgement. But in a case of this kind it is undesirable to base a decision on any narrrow ground; and I propose to consider shortly whether either on the findings of the jury, or on the evidence, there is any ground for the judgement entered against Dr. Adam.

First, then, was there any ground for charging Dr. Adam with conspiring with Dr. Bond to cause the plaintiff to be detained and removed to Malling Place? Plainly not. There was no evidence to support such a charge, and it is negatived by the findings of the jury. I therefore dismiss this charge as wholly untenable.

Secondly, was there ground for charging Dr. Adam with false imprisonment—that is to say, with retaking or detaining the plaintiff without lawful authority? As to this, it was argued that under the terms of the leave of absence order set out above, Dr. Adam could only take back the appellant if the mental condition of the latter required it, and that, as the jury have found the appellant to have been sane on December 14th, 1912, this condition was not fulfilled. In my opinion there is no foundation for this argument. The provision in the leave of absence order empowering the medical officer to take back the patient "if his mental condition requires it" cannot mean that the medical officer is to take back the patient (if at all) at the risk of having it found by a jury many years afterwards that the patient's mental condition was consistent with his remaining at large. Some person must be the judge of the patient's mental condition at the time when the question arises, and this person can only be the medical officer in whom the power to retake him is vested. Nor is there any substance in the suggestion made by counsel for the appellant that the power to retake the patient reserved by the order could not be exercised by retaking him outside the licensed house. I think it clear that it was capable of being exercised wherever the patient might be found. When once the patient is retaken, the leave of absence order comes to an end, and he can be detained under the existing reception order.

But, thirdly, stress was laid on the finding of the jury as to want of reasonable care, and it was said that a medical officer could not retake a patient out on trial unless he acted with reasonable care in so doing, and that the onus was on him to prove reasonable care, and that if he failed to do so the retaking was void. This argument appears to me to be fallacious. The leave of absence order authorizes the medical officer to retake the patient if the patient's mental condition requires it. If this power is exercised negligently it may be that there is a remedy; but negligence does not make the retaking unlawful, and the remedy (if any) is by action for negligence and not by action for false imprisonment. But apart from this observation, I agree with the Court of Appeal in holding that in the present case there was no evidence on which the jury could properly find Dr. Adam to have failed to exercise reasonable care. It is suggested that he should have gone up to London himself or should have sent his assistant. But it was proved that the assistant was entitled to be absent from Malling Place on that afternoon, and that Dr. Adam could not leave the house without a medical officer; and in those circumstances he was entitled to rely on the information given him by Dr. Bond on the telephone, coupled with his own previous knowledge of the case, as sufficient ground for bringing the patient back, subject, of course, to the duty (which he performed) of personally examining him on his return. I agree that there was no evidence of negligence, and that Dr. Adam is entitled to judgement.

I desire to make one further observation. The fact that the appellant, whom the jury found to be sane in December, 1912, and whom they doubtless considered to be quite sane at the time when the action was heard, had been confined as a lunatic during the greater part of the interval between those dates has naturally given rise to anxiety. It was not proved at the trial or found by the jury that during that interval the appellant was of sound mind; but it is not impossible that the jury took that view and desired to compensate the appellant for his long detention by giving a verdict for heavy damages against the two defendants. If the defendants had been really responsible for an unjustifiable detention of the appellant during all those years the sum awarded might not have been excessive; but the full investigation of the case, both by the Court of Appeal and by this House, has led to the conclusion that no such responsibility can be justly laid on Dr. Bond or on Dr. Adam. The Lunacy Acts provide for the protection of the public against the risk of unjustified detention by forbidding the detention of any person as insane except on a proper certificate and in a place duly certified for that purpose, and by requiring that every patient so confined shall be personally seen and examined at regular intervals, both by the Commissioners in Lunacy and by the Visiting Justices, and shall be free to make complaint (in letters which must be forwarded unopened) to the Lord Chancellor or the Judge in Lunacy, to the Secretary of State, or to the Commissioners, or to the persons (generally his relations) on whose petition he has been confined. It may be—I do not say that it is—the fact that all these precautions are insufficient and that the lunacy laws require to be further strengthened in the interests of the persons whom they may affect. But even if that be so, that is no reason for visiting with vindictive penalties persons who have acted in good faith, and who are not responsible for any defect in the law.

In my opinion (the Lord Chancellor concluded) the Court of Appeal came to the right decision, and I move your lordships that this appeal be dismissed with costs.

Lord Dunedin's Judgement.

The following is the text of the judgement delivered by Lord DUNEDIN:

I have never had a shadow of hesitation in thinking that the judgement of the Court of Appeal was right. Mr. Harnett was detained in a private asylum under a reception order against which nothing has been said. He was then liberated for a period of twenty-eight days on trial under a leave of absence order signed by two Visiting Justices, but with a proviso authorizing the medical officer at any time during the twenty-eight days to take back the patient if his mental condition required it. Being out of the asylum in virtue of the leave of absence order, he, of his own accord, presented himself at the office of Dr. Bond. He saw Dr. Bond, who, having identified his case on the file, knew that he had come from Malling Place. He considered him to be in a very excited state, and thought it would be well that Dr. Adam should see him. He telephoned to that effect and a motor car with two attendants was sent to take him to Malling Place. Pending the arrival of the car Harnett was forcibly detained. For that detention it is admitted Bond had no legal justification. But what was the direct result of it? Only that Harnett was examined by Adam. It is true that a question was put to the jury: Did Dr. Bond cause Harnett to be sent back for the purpose only of his being examined by Dr. Adam or for the purpose of his being detained at Malling Place? To which they answered: Being detained at Malling Place. But the question, in my opinion, was illegitimate and misleading. Bond had no power to say that Harnett should be detained at Malling Place, and nothing that Bond thought or intended could make any difference as to Dr. Adam's power to put an end to his liberty on probation or his responsibility for taking that step. To ask the jury whether Bond's purpose in sending him back to Adam was that he should be detained at Malling Place was, if they were to answer as they did, simply to ask them to affirm a *non sequitur*. Conceivably, though I doubt it, such a question might have been founded on averments as to a malicious motive on Bond's part with an intent to injure, but there was nothing of that in the case. Following on their answer to this question, the jury were instructed that they could give damages for the whole period of Harnett's detention, though that detention began, as already stated, by Adam's determination to end the period of probation, and was continued through all the years Harnett was in different places of confinement under renewed orders of different medical men. Such a suggestion has only, in my judgement, to be stated to be rejected. I look on it as preposterous.

As to Dr. Adam, I think he is clearly, in the circumstances, protected by Section 330 of the Lunacy Act.

I feel bound to add that the question of whether a person so admitted can under existing safeguards be kept for an unduly long period in a lunatic asylum is not the question in this case. Indeed, the learned judge expressly told the jury they would not be called on to say what was the plaintiff's mental condition during the nine years of detention. The course of inquiry permitted in the case clashed strongly, in my judgement, with that pronouncement.

Lord ATKINSON: I concur.

Lord SUMNER: I concur.

Lord Buckmaster's Judgement.

The following judgement was delivered by Lord BUCKMASTER:

According to the verdict of the jury in this case, the plaintiff while a sane man has been imprisoned in a private lunatic asylum, and it follows that he has suffered a grievous wrong, for which no money payment can provide an adequate compensation. The jury have obviously been impressed with the gravity of the position, and have given a verdict in favour of the plaintiff, which has resulted in a judgement for £5,000 as damages against Dr. Bond

and £20,000 against Dr. Adam and Dr. Bond jointly, who, they say, were in their several degrees held responsible for the injuries that he sustained. The only question is whether Dr. Bond and Dr. Adam, together or separately, are legally liable for these sums. Dr. Bond is one of the Commissioners in Lunacy, whose offices are in 66, Victoria Street. Dr. Adam is the licensed proprietor of a home for the reception of persons of unsound mind at West Malling, in the county of Kent. On November 10th, 1912, Dr. Adam received the plaintiff in this establishment under a reception order which has not been challenged in these proceedings. On December 12th, thinking the plaintiff sufficiently restored to justify his release upon a probation order, the plaintiff was permitted to leave the establishment in company with his brother. The brother, however, was not responsible for his safe keeping, nor was the plaintiff placed under his control. On the morning of December 14th, at about 10.15, the plaintiff appeared at the offices of the Commissioners in Lunacy with £30 in a handbag, and asked to see a Commissioner. He said that he desired that the money should be deposited with the Commissioners to pay for a man to be sent to his house to prevent his being returned to the asylum. The statement as to what actually occurred and the true sequence of events is far from plain. The plaintiff's own account is not consistent, nor does Dr. Bond's memory agree exactly with the memorandum taken at the time. Dr. Bond appears to have thought that the plaintiff had eluded his brother's custody, and this may be explained by one of the plaintiff's statements in evidence when he said he told Dr. Bond, "I am to be under my brother for twenty-eight days." Influenced, it may be, by this, Dr. Bond communicated with Dr. Adam on the telephone, informing him that the palintiff was there, and stating that he did not think he ought to be at large. The plaintiff stayed at the offices from 10.15 to 1.30; at 1.30, when he proposed to go for lunch, he was informed that he was not at liberty to go, and two efforts that he made to leave were prevented, but it is not suggested that any actual force or violence was exercised. He was, however, detained until about 2.30, when two attendants, sent by Dr. Adam from West Malling, arrived in a motor car, when he was given into their custody and by them taken back to Dr. Adam, and he remained under restraint at one institution or another from that time until his escape in 1923. The detention by Dr. Bond was an unlawful act for which he is responsible in damages. And it was decided by the learned judge that the measure of these damages might be taken in terms of the whole period of the plaintiff's confinement. I am unable to see how this can be supported. Dr. Bond had no power and no authority over Dr. Adam, and when once the plaintiff was returned to West Malling the duties with regard to his custody devolved upon and were discharged by Dr. Adam alone. If Dr. Adam had thought that, whatever appearance the plaintiff had presented at Victoria Street, he was none the less fit to be at liberty, it was his plain duty to have acted accordingly, nor can I think that any statement made by Dr. Bond upon the telephone as to what he thought can have caused Dr. Bond to share in or be party to the judgement that Dr. Adam formed. From the time when Dr. Adam reassumed control Dr. Bond's responsibility ceased. The Court of Appeal had held that this was the time when the plaintiff actually returned to West Malling; there has been no appeal from this judgement, and it is, therefore, unnecessary to consider whether it did not cease at the earlier moment, when the plaintiff was placed in the charge of Dr. Adam's assistants at Victoria Street. The jury have, however, found that Dr. Bond did not honestly believe that the plaintiff was of unsound mind, and an attempt is made to explain this verdict by saying Dr. Bond acted on the belief that the plaintiff had escaped from his brother's custody. The explanation appears to me inadequate; whatever mistake Dr. Bond may have made, I can find nothing whatever in the evidence that on any interpretation of the word can cast the least question on his honesty, and I think it is to be regretted that a question should have been left to the jury in such a form that the verdict taken upon it must, in the plain meaning of the words, cast a reflection upon Dr. Bond's character which no sophistry can explain away. One injustice cannot be remedied in committing another.

Returning now to the case against Dr. Adam, the first thing to decide is what were his powers after the plaintiff had been liberated under the probation order. I have no desire to repeat what has already been said upon this point; when once it be accepted that such an order is in the nature of an experiment to try whether a man is fit to be restored to complete liberty, it appears to me to follow that the powers conferred by the reception order, including complete control of the person named in the order, are merely in abeyance, and at any time if the custodian honestly thinks it is in the interest of the patient the control can be resumed and the patient taken back. Any other contention would result in this: that if the patient completely broke down during the period of probation, it would require a new reception order before he could be taken back, and of this I can find no trace in the provisions of the statute. Dr. Adam was, therefore, at liberty to retake the plaintiff, and however deplorable may have been the mistakes which the verdict of the jury has decided were made, they have completely acquitted Dr. Adam in taking him back of doing any act except in what he honestly believed to be the interests of the plaintiff.

I am not impressed with the criticism about the entry in Dr. Adam's book as to the plaintiff's delusion with regard to drugs. It has never been suggested that the book was fabricated, nor is it impossible that the apprehension which the plaintiff admits he entertained after the removal of the strings of his pyjamas might have been both felt and expressed at an earlier date. However this may be, I can find no evidence that Dr. Adam so failed in the discharge of his duties as to render him liable in damages, and I agree with the judgement of the Court of Appeal that as against him the proceedings fail.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

THE Vice-Chancellor announces that applications for the E. G. Fearnsides scholarship for clinical research into organic diseases of the nervous system must be sent to the Registrary of the University before June 20th. The scholarship is open to graduates in Medicine or to graduates in Arts who have passed Part II of the Natural Sciences Tripos.

At a congregation held on May 15th the following medical degrees were conferred:

M.D.—H. J. Paterson, G. A. Harrison, T. L. Hardy.
M.B.—E. G. Holmes,
B.CHIR.—W. Brockbank.

UNIVERSITY OF LONDON.

Senatorial Election.

THE result of the election for a representative of medical graduates on the Senate was the re-election of Dr. E. Graham Little, M.P. for the University; he received 827 votes, against 281 for the other candidate, Mr. T. B. Layton, D.S.O., M.S.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN extraordinary comitia of the Royal College of Physicians was held on May 14th, when the President, Sir Humphry Rolleston was in the chair.

The minutes of the Censors' Board were read.

Lectureships.

The following appointments were made to lectureships: Dr. Bernard Hart to deliver the Goulstonian lectures, Dr. A. Shadwell the FitzPatrick lectures, and Sir Thomas Horder the Lumleian lectures in 1926.

Fellowship.

The twelve Members elected to be Fellows, at the comitia on April 30th (BRITISH MEDICAL JOURNAL, May 9th, p. 905), were admitted.

Licence.

The following supplementary list of 96 candidates to whom licences had been granted was submitted:

*Agnes L. Adam, D. Aserman, E. L. Auguste, C. W. Bamford, P. S. Bell, R. H. Bestawros, A. T. Bettinson, *Margaret Bowstead, P. D. Braddon, *Gwenddolen J. Brooke, *Stella M. Brown, *Dora M. Cadman, *Mary E. Campbell, W. E. Chiesman, *Eileen M. Clarke, *Gladys M. Clarke, *Winifred M. Clement, D. R. T. Clendon, I. Cohen, B. W. Cuningham, S. H. Daneel, Gwylon Davies, H. J. Davies, D. S. Dixon, J. V. Dockray, D. C. Drake, W. Egan, V. H. Ellis, A. J. K. Finch, *Barbara Finch, *Winifrede M. Fish, V. L. Fisher, M. Footerman, G. V. Gollerkeri, A. S. Gough, R. Green, C. J. Grosch, R. F. Guymer, L. B. Have, J. B. Hayes, *Barbara J. Hick, *Nancy M. Hield, A. R. Hill, A. T. Howell, J. U. Human, *Dorothea A. C. Hunt, J. N. Jacobson, H. Kessel, A. M. Lazarus, S. Lerner, S. Levy, C. J. Lovering, D. A. Lubbock, J. W. McGuire, A. C. MacLeod, D. H. MacLeod, D. R. Martin, A. Mead, G. C. Michael, *Ruth L. Milne, E. F. Molony, J. P. Monkhouse, H. Moore, A. H. Morley, V. M. Morris, I. S. Moscow, G. W. Murray, G. H. Pringle, P. E. Pym, *Fanny Rabinowitz, D. I. Rees, T. Rees, *Nellie H. Reynolds, A. W. Riddolls, C. E. Roberts, A. E. Ross, *Edith M. Ross-Johnson, T. W. E. Royden, *Martha N. Russell, H. H. E. Schulz, H. J. Selby, C. F. J. Smith, *Beatrice M. Smithies, K. A. Soutar, J. MacN. Stirling, S. V. Strong, *Sylvia Sworn, J. E. Swyer, K. H. Tan, J. G. S. Thomas, P. G. Trafford, N. A. A. van Buuren, T. E. Walsh, *Helen D. Watson, R. A. K. Wiener, H. G. Wimbush.

* Under the Medical Act, 1876.

Membership.

Dr. Hugh Roger Smith, who relinquished his membership in 1919, was granted permission to resume it.

Appointments.

Dr. Raymond Crawfurd was appointed a member of the Committee of Management, to fill the vacancy caused by the death of Dr. Ormerod.

The President announced the appointment of Sir Percival Horton-Smith Hartley as representative of the College at the Conference of the National Association for the Prevention of Tuberculosis.

By-laws.

It was decided to appoint a small subcommittee to codify the by-laws, in view of recent alterations in them.

The President then dissolved the comitia.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council meeting was held on May 14th, when the President, Sir John Bland-Sutton, was in the chair.

The late Sir Rickman Godlee.

The death of Sir Rickman John Godlee, Bt., K.C.V.O., F.R.C.S., past president and past member of the Council and of the Court of Examiners, was reported, and the following vote of condolence was passed:

That the Council hereby express their regret at the death of Sir Rickman Godlee and their very sincere sympathy with Lady Godlee in the great loss which she has sustained. The Council also express their grateful sense of the many services to the College by Sir Rickman Godlee as an Examiner and a Member of the Council, and especially record their appreciative recognition of the distinction and ability with which he fulfilled the duties of President during his three years of office. The Council feel that the surgical profession has lost one of its ablest leaders, whose skill in practice and many accomplishments will cause his name always to be held in honoured remembrance.

Diplomas.

Diplomas of Membership were granted to 234 candidates. Jointly with the Royal College of Physicians, diplomas in public health were granted to 15 candidates and in tropical hygiene and medicine to 22 candidates. (The list of names appeared in part in the report of the meeting of the Royal College of Physicians published in our issue of May 9th, p. 905; the remainder are printed in the present issue.)

Court of Examiners.

The vacancy on the Court of Examiners caused by the resignation of Mr. G. Percy Dodds-Parker will be filled at the ordinary Council in June.

Honorary Fellowship.

Professor Antonin Gosset of Paris, who was elected an Honorary Fellow of the College on June 12th, 1919, was introduced and signed the Roll of Honorary Fellows and was presented with the Diploma of Honorary Fellowship.

Medical News.

THE next session of the General Medical Council will begin on Tuesday, May 26th, when the President, Sir Donald MacAlister, Bt., K.C.B., M.D., will take the chair at 2 p.m. and give an address. The Council will continue to sit from day to day until the business is finished.

THE KING has approved the reappointment of Sir David J. Galloway, M.D., as an unofficial member of the Executive Council of the Straits Settlements.

A COURSE of four lectures on physic will be delivered by Sir Robert Armstrong-Jones, M.D., at Gresham College, on Tuesday, May 26th, and three following days, at 6 p.m. on each day. Admission is free. The subject is the history of medicine from the earliest times to the mediaeval period (about A.D. 1400).

THE annual dinner of the West London Medico-Chirurgical Society will be held at the Trocadero Restaurant, Piccadilly, to-day (Friday, May 22nd), at 7.30 for 8 p.m.

THE annual meeting of the supporters of the Lebanon Hospital for Mental Diseases, Asfuriyeh, near Beyrout, Syria, will be held in the rooms of the Medical Society of London, 11, Chandos Street, W., on Wednesday, May 27th, at 3.30 p.m. The chair will be taken by Dr. E. W. G. Masterman, who has recently visited the hospital, and the speakers will include Sir Wyndham Deedes and Pastor Hoffmann de Visme. Tea will be served at 4.30.

THE Fellowship of Medicine announces a lecture by Mr. G. Gordon-Taylor on May 25th on the prevention and treatment of shock in the surgery of the abdomen. The following courses have been arranged: A course in venereal disease, at the London Lock Hospital, Dean Street, and in dermatology, at St. John's Hospital, each beginning on June 2nd and lasting four weeks; clinical demonstrations at the London School of Hygiene and Tropical Medicine, from June 3rd to 25th; a course in gynaecology at the Chelsea Hospital for Women, June 8th to 27th; lectures and demonstrations on sunlight treatment, artificial pneumothorax, the electrocardiograph, etc., at the Victoria Park Hospital, from June 8th to 20th; a course in urology at St. Peter's Hospital, from June 15th to July 11th; an intensive course in medicine, surgery, and the specialties, at the London Temperance Hospital, from June 22nd to July 4th. The syllabus of each of these courses, and the programme of the Fellowship of Medicine, may be obtained from the Secretary at 1, Wimpole Street, W.1.

THE International Conference for the Use of Esperanto in Pure and Applied Science, which was held in Paris from May 14th to 16th, was attended by delegates of 112 societies, the representative of the British Medical Association being Dr. A. A. Martin of Eastbourne. M. Agourtine of Paris reported on the progress made since the first meeting of Esperanto doctors held in Cambridge, and the formation of a medical association (known as "Teka") in 1908. The activity of this association, suspended during the war, was revived in 1922, and considerable interest had been shown by many medical practitioners, especially in Japan. Another report on Esperanto and pharmacy related the progress of the International Pharmacopoeia proposed in 1910, the associated federation being established in 1912. It was reported that the difficulties in establishing an international nomenclature were being gradually overcome.

DR. OSCAR M. HOLDEN, on relinquishing the medical officership of health for Dewsbury to take up a similar post in Blackburn, has been presented by the staffs of the public and school medical departments of the Dewsbury Corporation with a silver flower vase.

THE house and library of the Royal Society of Medicine will be closed on Whit-Monday, June 1st.

A FESTIVAL dinner in aid of King's College Hospital was held at the Savoy Hotel on Wednesday, May 20th, with H.R.H. the Duke of Connaught in the chair.

THE British Social Hygiene Council is the name by which the National Council for Combating Venereal Diseases will be known in future. This change, we are informed, does not mean that any less attention will be given to direct propaganda and public enlightenment on the medical aspects of venereal disease, but that it is recognized that the medical field is not the only one in which efforts can be made towards building up conditions calculated to lead to a permanent diminution of disease.

THE annual report for 1924 of the Society for Relief of Widows and Orphans of Medical Men shows that the invested income has increased by £1,000, and now amounts to £148,650. By the by-laws only the income of this investment may be used for the payment of grants and expenses. The total income during the year was increased slightly, reaching the figure of £5,136 0s. 10d., the working expenses being £359 19s. 1d. Of this income, £349 15s. was received from subscriptions and donations, £68 5s. from life subscriptions, and £600 from legacies. The sum of £4,961 18s. was distributed in grants of different kinds, and on December 31st there were fifty-one widows and seven orphans in receipt of them. During the year five widows had died, including one who had been in receipt of assistance since 1847; her late husband paid in subscriptions £37 16s., and she received £3,250 in grants. Another widow, whose husband had paid £12 12s., received in grants £1,885. Such examples illustrate the great advantages gained by medical men becoming members of the society, which was founded in 1788. Membership is open to any registered medical practitioner who at the time of his election resides within twenty miles of Charing Cross. Should a member remove outside this radius, even beyond the British Isles, he nevertheless remains a member of this society if he conforms to the by-laws. Relief is granted to the necessitous widows and orphans of deceased members of three years' standing and to life members. Further information may be obtained from the secretary of the society, 11, Chandos Street, Cavendish Square, W.1.

THE third congress of the Italian Association of Hygiene will be held at Cagliari and Sassari in Sardinia from June 5th to 14th under the presidency of Professor Achille Sclavo. Further information can be obtained from the general secretary, Dr. Giovanni Palomba, via Vittorio Veneto 96, Rome.

THE seventeenth Russian Congress of Surgery will be held at Leningrad from May 26th to 31st, at the same time as the Congress of Therapeutics. The principal subject for discussion is the treatment of acute infective osteomyelitis and its sequelae, which will be introduced by Dr. F. N. Krasnobaiev. The clinical aspects and surgery of the vegetative nervous system will be discussed at a conjoint meeting of the two congresses by Drs. S. D. Pletnev, S. P. Fedorov, and E. R. Hessé. The subject of transplantation of endocrine glands will be opened by Professor V. A. Oppel.

THE fifth International Congress for the Protection of Childhood, which was to have been held in Madrid from April 12th to 19th, was postponed. Further information can be obtained from Dr. A. Bandelac de Pariente, 10, Square Moncey, Paris.

THE German Society for Combating Venereal Disease has arranged for the production of Brieux's play *Les Avariés* in several Berlin theatres.

THE medical faculty of Montpellier has celebrated the fourteenth anniversary of the nomination of Professor Forgue to the chair of clinical surgery by presenting him with a volume containing sixty papers by his students and friends.

THE monthly magazine, *The Temps*, which was originally the publication of the patients and ex-patients of Wooley Sanatorium, near Hexham, has now been extended to include propaganda and the general health activities of Northumberland. All profits from its sale are devoted to the Wooley Settlement Scheme, whereby employment under ideal hygienic conditions is provided for the patients at the sanatorium. The April number contains a summary of the health services of the county of Northumberland, articles on general health topics, tuberculosis, and the Wooley Sanatorium and Settlement.

THE value of the Zambaco prize awarded by the Société Française de Dermatologie et de Syphiligraphie has been raised from 800 to 1,500 francs. Candidates should send in their essays to the General Secretary, Hôpital St-Louis, Paris, not later than November 30th.

A RUSSIAN Society of Endocrinology has been founded at Moscow. It is proposed to start a journal and a library. Medical men and biologists are invited to send copies of their publications of the last ten years to the secretary, Dr. N. A. Schereschewsky, Arbat 26, Moscow.

Letters, Notes, and Answers.

Up to and including Thursday, May 28th, all communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, 429, Strand, W.C.2.*** After May 28th the postal address of the Editorial Department will be "BRITISH MEDICAL JOURNAL, British Medical Association House, Tavistock Square, W.C.1" (see p. 979).

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the BRITISH MEDICAL JOURNAL alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the BRITISH MEDICAL JOURNAL must communicate with the Financial Secretary and Business Manager, 429, Strand, W.C.2, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the JOURNAL, should be addressed to the Financial Secretary and Business Manager, 429, Strand, W.C.2.

The ***TELEPHONE NUMBER*** of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is *GERRARD 2630* (Internal Exchange).

The ***TELEGRAPHIC ADDRESSES*** are:

EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westrand, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London.*

MEDICAL SECRETARY, *Mediocera Westrand, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 4361 Central).

QUERIES AND ANSWERS.

TREATMENT OF ONYCHIA.

DR. J. FRASER MACKIE (Halkirk, Caithness) asks for suggestions for the treatment of a case of very chronic onychia. The patient finds it impossible to get a situation owing to the unsightly condition of her hands.

INFANT THERAPEUTICS.

"AN ELDERLY PRACTITIONER" writes from Australia: (1) Under what conditions is tea used in infantile therapeutics? Still mentions it incidentally in his book without giving particulars. (2) What is the objection to giving fruit juice, such as orange juice, before the age of 3 months?

*** We are indebted to Dr. Eric Pritchard for the following replies to these questions:

(1) Tea, in the form of a weak infusion, can be usefully employed in the treatment of febrile conditions in infancy, when the temporary suspension of food is indicated. It is specially useful in influenza with looseness of the bowels, also in the troubles connected with dentition. It has a soothing influence on the nervous system, and often induces sleep. The alkaloid caffeine, to which the therapeutic effect of tea is doubtless due, may be substituted for the infusion if accurate dosage is required: 1 grain of caffeine citrate may safely be given a baby 8 months of age.

(2) There is no objection to the giving of fruit juice to young babies. It has become a habit or tradition to delay its administration until they are about 3 months of age. Reliance is placed on the fact that infants are usually born with some reserve of the antiscorbutic vitamin, but it is not safe to trust to this supposition; the infant has the same need for this vitamin at 1 month as it has at 6 months, and some pediatrists order grape juice or orange juice from the 2nd week of life onwards without intermission, not only in cases of artificial feeding, but in breast-feeding also.

LETTERS, NOTES, ETC.

"CENTRAL FIXATION."

AN assistant medical officer of health has sent us a cutting from a local newspaper containing a report of some remarks made by a town councillor on the annual report of the school medical officer. The councillor commented on the number of children fitted with spectacles, which, he said, would be a handicap to them later on when situations were sought. "As the Education Committee doubtless knew, there was another process of dealing with myopia, etc., now to the fore, called 'central fixation,' and it had done excellent work, not only here, but very widely in America. Not only were the young treated successfully, but old people also. Even if it meant six months' rest for a child, it was better than saddling it with spectacles for a lifetime, when it had been proved that spectacles were not by any means always needed." Our correspondent is confused by this statement and asks for an explanation.

We have referred the matter to Mr. Bishop Harman, who has been good enough to send the following instructive reply:

"Central fixation" is a perfectly well known and established term in ophthalmic work. It connotes the power of the normal eye to look directly and fixedly at a given object—that is, to bring the macula into line with the object to be viewed. Unless this be done there is no clear vision, for detailed vision is only obtained at the restricted area, or rather point, of the macula. Every normal eye has central fixation, whatever the error of refraction may be. The myope fixes centrally, so does the hypermetrope, but by reason of the error of focus images are not seen distinctly, even though there is central fixation. With proper correcting lenses the badly focused eyes obtain with central fixation clear and defined vision. An eye which has become amblyopic from disuse, as in children with squint, loses central fixation; when the good eye is covered the squinting eye is unable to fix a given object, for the macula has lost its sensitiveness. Many conditions of defect of the eye from congenital and infantile disease are associated with loss or absence in whole or part of central fixation—for example, the infant who has suffered from ophthalmia neonatorum, even though it has escaped obvious damage to the tissues of the eye, may be found a year or so afterwards to have nystagmus. The closure of the eyes by disease during the first three weeks of life prevented the appropriate stimuli reaching the maculae, so that there is poor development and central fixation is imperfect; the nystagmus is due to this. So also with miner's nystagmus: there is a diminution of good central fixation. A whole host of cases with congenital nystagmus show the same poor central fixation. Failure of central fixation can scarcely be remedied. The suggestion that "central fixation" is a substitute for glasses has no meaning. I do not know whether some quack has attempted to purloin the term for ulterior purposes, as have the osteopaths and such other brigands other medical terms. Anything is possible in these days. But on the face of it the statement in this cutting would not appear to imply this. It seems that the worthy councillor has become entangled in the statements which he has had from a young doctor. The need for spectacles for the correction of considerable errors of refraction in school children is not a matter for debate. The facts have been established for many years. Numberless school medical officers have published carefully documented records of the examination of large blocks of children, showing the refraction of the eyes and the vision obtained. These have been collected on more than one occasion and included in the annual report of the Medical Officer of the Board of Education. The children are born with these defects. Proof of that may be found in a paper I read at the Ophthalmological Society in 1919 (*Transactions*, p. 79). That paper gave a full record of the examination of the refraction of the eyes of all the infants in a good class London school; the examinations were made under mydriasis; 368 infants were examined. Taking all those who had less than 2D. of hypermetropia and 0.5D. of hypermetropic astigmatism as fair average eyes which need no assistance, it was found that 65.1 per cent. had average eyes and 34.9 per cent. had eyes with such errors of refraction as would or were likely to need the help of glasses. For at least 10 per cent. glasses would be imperative if any school work needing serious study were to be undertaken; otherwise, the child would be put to injurious strain, or the education provision would be wasted on the child.

BUYING A CAR.

The Autocar of May 15th is issued as a special number devoted mainly to the interests of new motorists. It contains advice on selecting a car; a reference table, which gives a summary of the horse-power, tax, weight, price, and other details of each car; and an article in which the mechanism of a motor car and the functions of its various parts are explained. Useful hints are given about the need for care and consideration for others in the early stages of motor driving, and attention is drawn to a problem of motor insurance which is frequently forgotten by motorists. Policies are so framed that the companies are only responsible for the replacement value of any portion of a car that is damaged in an accident. Consequently, if a car is kept for a sufficient number of years, its replacement value may become practically *nil*, although the insured continues, as a rule, to pay the same premium. It is true that the Medical Insurance Agency (429, Strand) has a special "doctor's policy" (underwritten at Lloyd's), under which reduced values determine the premium payable as the car grows older. But this does not meet the difficulty completely, and there seems to be no method by which the insured owner can avoid considerable expense in replacing an old car accidentally destroyed by fire. *The Autocar* is of opinion that "a very drastic revision of automobile insurance is overdue." An article on "Housing the car at home" is useful, and is illustrated with many types of garage. An extract from an account of the 1,000 miles run to Edinburgh in 1900 gives the novice some idea of his indebtedness to his forefathers, whose trials have led to the production of that perfect instrument, the modern motor car.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 38, 39, 42, and 43 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 40 and 41.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *231*.